Prescription Writing

Mann

A MANUAL

OF

PRESCRIPTION WRITING

WITH A FULL EXPLANATION OF THE METHODS OF CORRECTLY WRITING PRESCRIPTIONS, A TABLE OF DOSES EXPRESSED IN BOTH THE APOTHECARIES' AND METRIC SYSTEMS; RULES FOR AVOIDING INCOMPATIBILITIES AND FOR COMBINING MEDICINES.

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FOURTH EDITION, REVISED, ENLARGED, AND CORRECTED ACCORDING TO THE U. S. PHARMACOPŒIA OF 1880.

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PREFACE TO FOURTH EDITION.

THE continued favor with which this little work has been received has encouraged the Author to carefully revise it, and to make such changes as are necessary to bring it into harmony with the Pharmacopœia of 1880. Its value is still further enhanced by the addition of an index.

In making these changes and in putting it through the press the Author must acknowledge his great indebtedness to his friend, Dr. Eli H. Long, of this city, he having in fact performed most of the work of revision.

BUFFALO, *May* 25, 1885.

PREFACE.

THAT more careful teaching in the matter of prescription writing is necessary, the records of every drug store will most conclusively show. Our medical schools almost entirely neglect this part of medical education, so that the student is left either to pick up for himself, or to get from his Preceptor—he himself having been imperfectly instructed—a knowledge of one of the most important of the minor departments of medicine. Perhaps one reason for this neglect is to be found in the absence of a proper text-book. Various attempts have been made to supply this want, both in this country and abroad. The now classical work of Pereira has, until a recent date, occupied the field alone. But its imperfections are so great, and the amount of useless material contained in it so large, that others have been stimulated

to supply something simpler and more suitable for the student. Griffiths has done this for English students: but the differences between the Pharmacopœias of the two countries, the different methods adopted in prescription writing, as well as the different weights and measures employed, make his book next to useless for American students.

The work of Gerrish is most complete and useful as far as it goes, but is too limited in its scope.

In these pages an effort has been made to supply what, in the experience of the writer, has been found to be most required. In the preparation of such a work there is, of course, little chance for originality of thought; a careful collection and arrangement of what has been said before being about all that could be done. I have drawn, therefore, freely from the works of others, especially from the three mentioned, and hope that the selection will prove advantageous to the student and convenient to the teacher.

If the elaboration of details seem at times unnecessary, I must beg the critic to remember that it is done for the benefit of those who are at the very threshold, and to whom the whole subject is one of perplexity and mystery.

The introduction of a chapter on the Metric System supplies a deficiency very much felt, and is certainly demanded by the times. The method of writing this system here given is that employed on the continent of Europe and elsewhere. Whether the exclusive use of the Gravimetric method is the best and most desirable is perhaps open to question; still it is the method generally employed, and is therefore the one here taught.

The arrangement of the drugs in the posological tables will commend itself to most, while the giving of the dose in metric terms will certainly greatly enhance its value. Perhaps the greatest difficulty met with was the determination of the proper doses. To this great care has been given; but at best the result must be very unsatisfactory, for reasons given elsewhere.

To the friends who have aided me by counsel and advice in the preparation of the manuscript, and in passing the pages through the press, I take the occasion of tendering my sincerest thanks.

151 WEST FORTY-THIRD STREET,
October 21st, 1878.

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PRESCRIPTION WRITING.

PART I.

Chapter I.—Definitions—The Parts of a Prescription.

A prescription, (from *præ*, "before," and *scriptum*, "written,") in medicine, may be defined to be the formula which a physician writes for dispensing or compounding a certain medicine or medicines, together with the directions to the patient for taking it.

This definition, although it includes more than is generally given, comprises no more than should be contained in every complete prescription.

Prescriptions may be either simple or compound; *simple*, when they contain only one ingredient—as, for instance, a dose of Epsom salts; *compound*, when they contain two or more ingredients, as when senna is added to the salts.

The term *formula* is applied to the direction for

compounding a medicine. Formulæ are officinal, and extemporaneous or magistral.

Officinal formulæ are those which are published in the different Pharmacopœias. (See chap. III., p. 17.) Medicines prepared according to these formulæ are supposed to be kept ready-made in the drug stores, so that in prescribing them it is only necessary to indicate the officinal name, the amount to be dispensed, and the directions to the patient for taking, thus making a complete prescription.

Extemporaneous or Magistral formulæ are so called because they are composed by the practitioner for the occasion.

A compound prescription consists of :—

1. The heading.
2. The names and quantities of ingredients.
3. The directions to the compounder.
4. The directions to the patient.
5. Date and signature.

I will now take up each one of these components and consider it alone.

1 *The Heading.*—The symbol ℞ is usually placed at the head of every prescription. It stands for the Latin word *Recipe* (pronounced Ré-ci-pe), which is the imperative mood of the Latin verb *recipio*, and means "take." Formerly prescriptions were headed by pious invocations to Jupiter or some other heathen deity, but these prayers were gradually shortened to the simple Zodiacal sign ♃. Other headings have been used at different times, but all have

been discarded, and we have finally come back to the sign of the old Olympian god, with the addition, however, of an upright stroke, which converts it into a convenient abbreviation, but with the remnant of the old superstition or heathenism still clinging to it.

In French the letter "P," or "Ps" (for prenez, take), is usually substituted.

2. *Names and Quantities of Ingredients.*—This part of a prescription is always written in Latin, and in a typical prescription is supposed to contain the following:

THE BASIS, or principal active agent.

THE AUXILIARY or adjuvant, to aid or promote the action of the Basis.

THE CORRECTIVE, to correct or modify its action.

THE VEHICLE, to give a proper form or taste to the whole.

"These four parts of a formula," says Pereira, "are intended to accomplish the object of Asclepiades, *curare cito, tute et jucunde*, in other words, to enable the basis to *cure quickly, safely and pleasantly.*"

The order in which the ingredients are to be taken is that already given; first the basis, then the auxiliary, afterwards the corrective, and lastly the vehicle. In writing, each one is to have a separate line.

It is by no means necessary that each prescription shall contain so many ingredients. The basis may need no aid in doing its work, may require no corrective of its action nor any special vehicle. On the

other hand, we are not limited to four ingredients; as many substances may be combined as in the opinion of the prescriber may be for the benefit of his patient. In olden times prescriptions contained immense numbers of the most incongruous and curious ingredients. *Shot-gun prescriptions* they have been called, because of their propensity to scatter, and of the certainty of their hitting somewhere. The tendency now is towards simplicity; but there is danger in carrying this too far; for there are many valuable effects which may be obtained by proper combinations. (See chap. IX.)

The names of the different medicines used are determined by the Pharmacopœia, and are there expressed in Latin. The advantages of always using the Pharmacopœial or *officinal names*, as they are called, is manifest. By so doing all misapprehensions or doubt as to what is meant is done away with.

It is not safe even to use the chemical names; for chemical nomenclature is liable to change, so that mistakes might very easily happen were this method adopted. For example: corrosive sublimate was formerly considered to be a chloride of mercury, while now it is called a bichloride; and calomel is the chloride or, more properly, subchloride. The Pharmacopœia does away with any danger of mistake by calling one the corrosive and the other the mild chloride. The tendency in the U. S. Ph. is towards shortening the name as much

as possible. Wherever one name will suffice to distinguish the drug it alone is used. Hydrate of chloral is officinal under the name of "chloral;" simple cerate has been reduced to "ceratum;" Foxglove is called "digitalis" instead of "digitalis purpurea," as in the British Ph., and so on.

The quantities of each ingredient should be indicated, solids by the weights of the Apothecaries' or Troy system, and fluids by wine measure; or both may be indicated by weight, according to the French or Metric system.

The calculation of the amount of each ingredient wanted, although a very simple matter, I have sometimes found to be a stumbling-block to beginners. The following *rule* will make it quite plain: Having written down the names of the ingredients, each in a separate line, decide how many doses your mixture is to contain, or how many pills, suppositories, etc., you desire to have made. The total number of doses, multiplied by the quantity proper for the dose of each ingredient, will give the total amount of that ingredient required. This is to be set down opposite to its name.

3. *The directions to the Dispenser* are also written in Latin. They declare the manner in which the ingredients shall be prepared before dispensing them to the patient. It is not necessary to give very exact or explicit directions as to the best methods of compounding a prescription. For although a certain familiarity with the rules of pharmacy is

necessary for a physician in order that he may write elegant prescriptions ; yet the choice of the method of compounding may be safely left to the apothecary, as a knowledge of such methods is a part of his business.

Sometimes we may require to have drugs prepared in a certain way, when there is a choice of methods, and when the adoption of a certain one would make a difference in the result. In such cases, which occur rarely, the directions must be written out in full and with great care.

4. *The Directions to the Patient.*—This part of the prescription is called the *Signature*, and is commonly preceded by the letter S, or the abbreviation Sig., standing for the Latin word *Signa*—"sign."

In this country the directions to the patient are usually written in English, while in Europe, and in England particularly, Latin is still employed. The use of English for this part is, however, much to be preferred, as by its use all danger of mistakes from mistranslation are avoided, and the patient is able to see for himself that the directions are correctly copied upon the label. The directions should *always be written out in full.* The dose, hours for taking, method of taking, and whatever else is necessary for the patient to know concerning it, should be written out carefully and plainly, so that no mistake can occur. Particularly to be avoided, is the practice of giving the patient verbal directions and then writing on the prescription "As directed."

If this latter procedure is followed, the druggist, not knowing how large a quantity of the mixture is to be taken at once, cannot judge of the correctness of the doses; and if the drug is of a powerful nature, may not desire to dispense it without knowing its destination and proposed use. Again, if the directions are given to the patient or to his attendants, they may be forgotten wholly or in part, or confusion may arise between different bottles, perhaps endangering the welfare or even the life of the patient.

All preparations for topical application or injection should be ordered to be so marked; and if one of the ingredients is a powerful poison, the word "Poison" should be ordered to be placed on the bottle, provided, of course, that there is no special objection to the patient's knowing that he is taking a poison.

Every prescription should be signed by the writer with his name in full, and, if in a large city, with his address and perhaps office hours. The reasons for this are that the apothecary, if in need of further information, either on account of illegibility or an actual or supposed mistake or doubt as to certain points, may be enabled to communicate with the physician without the necessity of going to the patient, and without his knowledge. The practice of putting the name of the patient on the prescription is also to be recommended, especially where there are two or more patients in the same family. The date should always be added, both because it may be

convenient for reference, and because it may become of very great importance in a medico-legal point of view.

It is well when very large or unusual doses of a powerful remedy are ordered, to add at the bottom of the prescription something to this effect: "This dose correct," or "Large dose intentional;" otherwise a careful dispenser may refuse to make up the prescription without previously consulting the prescriber, and thus causing the loss of perhaps valuable time.

In case it is not desirable that the prescription shall be repeated without the special recommendation of the physician, an order to that effect may be put on its face. Such an order will be followed by every responsible druggist.

CHAPTER II.

WEIGHTS AND MEASURES.

The weights and measures most used in the United States, both by physicians in prescribing and by pharmacists in dispensing medicines, are the Troy System of Weights, and the Wine Measure.

The *weights* are derived from the *Troy pound*, and are—

The Pound,	Symbol	℔	Latin	Libra.
The Ounce,	"	℥	"	Uncia.
The Drachm,	"	ʒ	"	Drachma.
The Scruple,	"	℈	"	Scrupulum.
The Grain,	"	gr.	"	Granum.

In the Pharmacopœia of 1870,* the pound, drachm and scruple were all omitted, and all weights expressed in ounces and grains. This was done to avoid confounding the Troy and the Avoirdupois pounds. It would undoubtedly be safer if this practice were followed in prescription writing; as many errors have occurred through mistaking the ℈ for the ʒ. If hastily written they may resemble each other very

* The U. S. Ph. of 1880 expresses the quantities of substances simply in *parts by weight*.

much. But the old signs are so endeared by long familiarity and use that they will probably never be given up as long as this system continues in vogue. The *measures* are derived from the *wine gallon*, and are—

The Gallon,	Symbol	C.	Latin	Congius.
The Pint,	"	O.	"	Octarius.
The Fluidounce,	"	f℥.	"	Fluiduncia.
The Fluidrachm,	"	fℨ.	"	Fluidrachma.
The Minim,	"	♏.	"	Minimum.

To distinguish the fluidounce and the fluidrachm from the ounce and drachm, the letter *f* should be put before the respective symbols. This is very commonly omitted, it being generally understood that fluids are to be measured, and not weighed. If the prescription is to go out of this country this should not be done, as the omission would lead, in some parts of the world, to the ingredients all being weighed.

The following tables indicate the relative value of the different weights and measures:

Apothecaries' or Troy Weight.

Pound.		Ounces.		Drachms.		Scruples.		Grains.
lb. 1	=	12	=	96	=	288	=	5760
		℥1	=	8	=	24	=	480
				ℨ1	=	3	=	60
						℈1	=	20

Apothecaries' or Wine Measure.

Gallon.		Pints.		Fluidounces.		Fluidrachms.		Minims.
C. 1	=	8	=	128	=	1024	=	61440
		O. 1	=	16	=	128	=	7680
				f℥ 1	=	8	=	480
						f℥ 1	=	♏ 60

In the British Pharmacopœia the weights and measures differ somewhat from ours. Their pound contains 16 ounces and 7000 grains; the ounce has therefore 437.5 grains. Their pint has 20 fluidounces and the fluidounce is equal to 7 fluidrachms and 2.5 minims, the minim therefore being equal to .96 of our minim. These facts must be borne in mind when taking formulæ from English books. Quantities are always expressed, except fractions, by the numeral adjectives or their symbols.

Numeral Adjectives.

	Cardinals.		Ordinals.	
1	I	Unus	1st	Primus
2	II	Duo	2nd	Secundus
3	III	Tres	3rd	Tertius
4	IV	Quatuor	4th	Quartus
5	V	Quinque	5th	Quintus
6	VI	Sex	6th	Sextus
7	VII	Septem	7th	Septimus
8	VIII	Octo	8th	Octavus
9	IX	Novem	9th	Nonus
10	X	Decem	10th	Decimus
11	XI	Undecim	11th	Undecimus
12	XII	Duodecim	12th	Duodecimus

	Cardinals.		Ordinals.	
13	XIII	Tredecim	13th	Tertius decimus
14	XIV	Quatuordecim	14th	Quartus decimus
15	XV	Quindecim	15th	Quintus decimus
16	XVI	Sexdecim	16th	Sextus decimus
17	XVII	Septendecim	17th	Septimus decimus
18	XVIII	Octodecim	18th	Octavus decimus
19	XIX	Novendecim	19th	Nonus decimus
20	XX	Viginti	20th	Vicesimus
21	XXI	Viginti unum	21st	Vicesimus primus
22	XXII	Viginti duo	22nd	Vicesimus secundus
30	XXX	Triginta	30th	Tricesimus
40	XL	Quadraginta	40th	Quadragesimus
50	L	Quinquaginta	50th	Quinquagesimus
60	LX	Sexaginta	60th	Sexagesimus
70	LXX	Septuaginta	70th	Septuagesimus
80	LXXX	Octoginta	80th	Octogesimus
90	XC	Nonaginta	90th	Nonagesimus
100	C	Centum	100th	Centesimus

In writing the cardinal symbols it is always customary to draw a line over the top and then to indicate each i by a distinct dot. This enables the apothecary to distinguish between, for instance, a carelessly written v and ii. A single i, or the i at the end of a combination, is written like a j, these letters being interchangeable in Latin.

As there are no fractions in the Roman numerals they must generally be expressed in the Arabic characters. If we wish to write out the Latin in full, we may express the half of a unit by prefixing the word *semi*, as semiuncia ℥ss., semiscrupulum, ℈ss., etc. The same may be expressed by the use of the word *semis*, a half, and the genitive case of the

word expressing the weight or measure; as *drachmæ semis* (accusative *semissem*). Where a unit precedes the half, we write the unit and "with a half," *cum* with the ablative case. Thus, *Recipe drachmas quatuor cum semisse;* take four drachms and a half. Again: The adjective *dimidius* may be used with the word *pars*, part; thus, *grana dua cum parte dimidia*, or simply the noun *dimidium*. This is not so common as the use of *semis*. For one ounce and a half we have the word *sesuncia*. The other fractions are written by using *pars*, with the ordinal adjective agreeing with it; as, *Recipe grani partem tertiam*, take the third part of a grain; or *grani tres quartas partes*, gr. ¾, and so on.

Domestic Measures.—Owing to the ignorance displayed by the average layman in regard to every thing pertaining to the officinal weights or measures, it is not customary to direct that medicines are to be taken in fluid ounce, drachm or minim doses. We direct instead that our patients shall employ some domestic measure with which they are familiar, and which is supposed to contain something very near to some one of the regular measures. Such domestic measures are

The Teaspoon supposed to contain 1 drachm.
The Dessertspoon " " " 2 "
The Tablespoon " " " 4 "
The Wineglass " " " 2 fluidounces.

It becomes very evident on a superficial examination that such measures are extremely unreliable.

Teaspoons, for instance, vary all the way from one to two drachms; while a wineglass may hold from one and a half to three fluidounces. A case occurred recently in England where an infant was killed by the dose of a mixture containing opium being measured in a teaspoon which held nearly two drachms. Other similar instances with somewhat less unfortunate results have probably happened very frequently.

Exactitude in dosing is one of the things in which the profession have been singularly lax. We know that the action of medicines varies markedly with size of the dose; and knowing this, it is certainly curious that we do not take more pains to see that our patients get the amount we intended, rather than one-half or twice as much. In order to accomplish this, every practitioner should insist on each patient or family's providing themselves with a properly graduated glass for measuring doses. Such a glass can be purchased at almost any drug store at a small cost. Many of the medicine glasses in the market are very faulty. Those imported from England are graduated according to the Imperial and not the Wine measure, and are therefore incorrect. The best glasses are those of a conical shape, carefully marked with teaspoonful and tablespoonfu.. measures; the teaspoonful being exactly a drachm and so on. Those shaped like a tumbler are too large at the bottom to measure as small a quantity as a teaspoonful with any thing like accuracy.

It is customary with many practitioners to write for so many *drops* in their prescriptions, or to order the patient to take so many drops of a certain preparation. This practice cannot be too severely condemned. The size of a drop depends on so many factors, such as the density of the fluid, the shape of the vessel from which it is dropped, the steadiness of the hand, that it is a most uncertain quantity and does not even approximate to a minim, as is generally supposed. Several patent droppers have been introduced but they do not at all remove the difficulty. If it is desired to administer small quantities of an undiluted liquid, the best way is to employ the minim pipette.* This is a tube of glass divided by marks on its surface into minims, usually up to ten. The method of using this little instrument is so simple that any one can accomplish it after a few minutes' practice. Place the finger over the top, put it into the bottle down to the bottom, raise the finger for a moment to allow the fluid to run in, and then replace the finger and raise the tube to the top and let the fluid run out very slowly until it is down to the required mark.

To show the difference in the size of drops of different fluids, I add the following table, which, although by no means complete, is sufficient to illustrate the points given.

* Introduced by Dr. Squibb of Brooklyn.

TABLE OF DROPS IN A FLUIDRACHM.

Acetum Opii.	70	to	90
Acidum Hydrocyan. Dil.	45		
Acidum Sulphuric, Arom.	116	"	148
Acidum Sulphuric, Dil.	54	"	49
Æther,	150		
Alcohol,	120	"	143
Chloroform,	180	"	276
Liq. Potas. Arsenit.	59	"	63
Oleum Carui,	106	"	108
Oleum Ricini,	55		
Syrupus Scillæ,	85	"	88
Tinct. Aconiti. Rad.	118	"	130
" Ferri Chloridi,	106	"	151
" Opii.	106	"	147
" Opii Camph.	95	"	110

CHAPTER III.

PREPARATIONS.

1. *Officinal preparations.*—It is evidently essential that, in order to avoid confusion, there should be some recognized official list of drugs, and a perfect uniformity in the method of making the different preparations. In many countries this is done under the order of government, and is made a matter of law; but in the United States, the government has left it entirely to the profession; and conformity is only secured by voluntary action. The medical and pharmaceutical professions appoint a joint committee to whom this work is deputed. The book containing the list of drugs and the method of making the different preparations which is published by this committee is called the United States Pharmacopœia.* It is revised once in ten years, when new drugs and preparations, which have stood the test of practice

* Usually abbreviated to U. S. Ph., British Ph. to B. Ph., etc. In France it is called the Codex.

and experience, are added. The drugs which are found in the list of the Pharmacopœia are called *officinal drugs*, and the preparations *officinal preparations*.

The U. S. Ph. of 1880 differs in its arrangement from the previous one. It contains a list of most of the drugs in use, with a brief description of each, together with the preparations to be made from the crude drugs, if any, and the methods of their manufacture. The drugs and their preparations are arranged alphabetically for ease of reference.

Of the preparations there are thirty classes; and a knowledge of them, their strength or proper dose, and of their general pharmaceutical relations, is essential before any one can intelligently write prescriptions.

The *officinal preparations* are as follows:

AQ'UA.—*A water* is a solution of a volatile substance in water. There are 13 officinal.

Aqua Ammoniæ.	Aqua Cinnamomi.
" Ammoniæ Fortior.	" Creasoti.
" Amygdalæ Amaræ.	" Fœniculi.
" Anisi.	" Menthæ Piperitæ.
" Aurantii Florum.	" Menthæ Viridis.
" Camphoræ.	" Rosæ.
" Chlori.	

LI'QUOR.—*A solution* is a preparation made by dissolving a non-volatile substance in water. The U. S. Ph. includes 26.

Liquor Acidi Arseniosi.
" Ammonii Acetatis.
" Arsenii et Hydrg. Iodidi.
" Calcis.
" Ferri Acetatis.
" " Chloridi.
" " Citratis.
" " et Quininæ Citratis.
" " Nitratis.
" " Subsulphatis.
" " Tersulphatis.
" Gutta-Percha.*
" Hydrargyri Nitratis.
Liquor Iodi Comp.
" Magnesii Citratis.
" Pepsini.
" Plumbi Subacetatis.
" " " Dilutus.
" Potassæ.
" Potassii Arsenitis.
" " Citratis.
" Sodæ.
" " Chloratæ.
" Sodii Arseniatis.
" " Silicatis.
" Zinci Chloridi.

MISTU'RA.—*A mixture* † is a preparation in which one or several insoluble medicines are held in suspension, by a suitable vehicle, in water. An *emulsion* is a suspension of an oil in water, in a state of minute sub-division, by the aid of a gum or some albuminous material. 11 mixtures are officinal.

Mistura Ammoniaci.
" Amygdalæ.
" Asafœtidæ.
" Chloroformi.
" Cretæ.
" Ferri Composita.
" " et Ammonii Acetatis.
Mistura Glycyrrhizæ Composita.
" Magnesiæ et Asafœtidæ.
" Potassii Citratis.
" Rhei et Sodæ.

MUCILA'GO.—*A mucilage* is a solution of a gummy substance in water. There are only 5.

* Dissolved in chloroform.

† Compare page 56.

Mucilago Acaciæ.
" Cydonii.
" Sassafras Medullæ.
Mucilago Tragacanthæ.
" Ulmi.

INFU'SUM.—*An infusion* is a preparation made from a vegetable drug by the aid of cold or hot water, but without boiling. They are prepared either by displacement or maceration. Of officinal Infusions there are 5.

Infusum Brayeræ.
" Cinchonæ.
" Digitalis.
Infusum Pruni Virginianæ.
" Sennæ Compositum.

DECOC'TUM.—*A decoction* is made by boiling a vegetable drug, for a varying length of time in water. The officinal decoctions are—

Decoctum Cetrariæ.
Decoctum Sarsaparillæ Comp.

SYRU'PUS.—*A syrup* is a stronger solution of sugar in water, either simple or combined with some medicinal substance. Sometimes diluted alcohol is added (marked A in list), and several of them, as Syr. Scillæ, Syr. Alii, Syr. Acidi Citrici and Syr. Limonis, are acid in their reaction. In the Pharmacopœia we find 34.

Syrupus.
" Acaciæ.
" Acidi Citrici.
" " Hydriodici. (A)
" Allii.
" Althææ.
Syrupus Amygdalæ.
" Aurantii. (A)
" " Florum.
" Calcii Lactophosphatis.
" Calcis.

Syrupus Ferri Bromidi.
" " Iodidi.
" " Quininæ et Strychninæ Phosphatum.
" Hypophosphitum.
" " cum Ferro.
" Ipecacuanhæ.
" Krameriæ.
" Lactucarii.
" Limonis.
" Picis Liquidæ.
Syrupus Pruni Virginianæ.
" Rhei.
" " Aromaticus
" Rosæ.
" Rubi.
" " Idæi.
" Sarsaparillæ Comp.
" Scillæ.
" " Comp.
" Senegæ.
" Sennæ.
" Tolutanus.
" Zingiberis.

ELIX'IR.*—*An elixir* is a preparation usually made with dilute alcohol as a menstruum, and rendered pleasant to the taste by the addition of aromatics and very generally sugar. There is only one officinal,

Elixir Aurantii.

TINCTU'RA.—*A tincture* is an alcoholic solution made from the crude drug, by maceration or percolation, or by dissolving non-volatile principles. There are 72 officinal tinctures :

Tr. Aconiti.
" Aloes.
" " et Myrrhæ.
" Arnicæ Florum.
Tr. Arnicæ Radicis.
" Asafœtidæ.
" Aurantii Amari.
" " Dulcis.

* The word is indeclinable.

Tr. Belladonnæ.
" Benzoini.
" " Comp.
" Bryoniæ.
" Calendulæ.
" Calumbæ.
" Cannabis Indicæ.
" Cantharidis.
" Capsici.
" Cardamomi.
" " Comp.
" Catechu Comp.
" Chiratæ.
" Cimicifugæ.
" Cinchonæ.
" " Comp.
" Cinnamomi.
" Colchici.
" Conii.
" Croci.
" Cubebæ.
" Digitalis.
" Ferri Acetatis.
" " Chloridi.
" Gallæ.
" Gelsemii.
" Gentianæ Comp.
" Guaiaci.
" " Ammoniata.
" Humuli.
" Hydrastis.
" Hyoscyami.

Tr. Ignatiæ.
" Iodi.
" Ipecacuanhæ et Opii.
" Kino.
" Krameriæ.
" Lavandulæ Comp.
" Lobeliæ.
" Matico.
" Moschi.
" Myrrhæ.
" Nucis Vomicæ.
" Opii.
" " Camphorata.
" " Deodorata.
" Physostigmatis.
" Pyrethri.
" Quassiæ.
" Rhei.
" " Aromatica.
" " Dulcis.
" Sanguinariæ.
" Saponis Viridis.
" Scillæ.
" Serpentariæ.
" Stramonii.
" Sumbul.
" Tolutana.
" Valerianæ.
" " Ammoniata.
" Vanillæ.
" Veratri Viridis.
" Zingiberis.

There is also a general formula for the manufacture of tinctures of fresh herbs,

Tincturæ Herbarium Recentium,

according to which they are to be prepared when not otherwise directed.

SPIR'ITUS.—*A spirit* is a solution of a volatile principle, or principles, in alcohol. They are made by distillation from the pure drug, or by simple solution. There are 22 in the list.

Spiritus Aetheris.
" " Comp.
" " Nitrosi.
" Ammoniæ.
" " Aromaticus.
" Anisi.
" Aurantii.
" Camphoræ.
" Chloroformi.
" Cinnamomi.
" Frumenti.
Spiritus Gaultheriæ.
" Juniperi.
" " Comp.
" Lavandulæ.
" Limonis.
" Menthæ Piperitæ.
" " Viridis.
" Myrciæ.
" Myristicæ.
" Odoratus.
" Vini Gallici.

VI'NUM.—*A wine* is a preparation made with white wine. 14 are officinal.

Vinum Album.
" " Fortius.
" Aloes.
" Antimonii.
" Aromaticum.
" Colchici Radicis.
" " Seminis.
Vinum Ergotæ.
" Ferri Amarum.
" " Citratis.
" Ipecacuanhæ.
" Opii.
" Rhei.
" Rubrum.

ACE'TUM.—*A vinegar* is a preparation made by using vinegar or dilute acetic acid as a menstruum. Only 4 are officinal.

Acetum Lobeliæ.
" Opii.
Acetum Sanguinariæ.
" Scillæ.

MEL.—*A honey* is prepared with honey as a basis. They are little used, but 2 being in the list.

Mel Despumatum.
Mel Rosæ.

GLYCERI'TUM.—*A glycerite* is a preparation having glycerine for a menstruum. There are only 2 officinal.

Glyceritum Amyli.
Glyceritum Vitelli.

OLEUM DESTILLA'TUM.—*Volatile, Distilled, or Essential oils* are volatile oily principles obtained by distillation. There are 40 officinal.

Oleum Aethereum.
" Amygdalæ Amaræ.
" Anisi.
" Aurantii Corticis.
" " Florum.
" Bergamii.
" Cajuputi.
" Cari.
" Caryophylli.
" Chenopodii.
" Cinnamomi.
" Copaibæ.
" Coriandri.
" Cubebæ.
" Erigerontis.
" Eucalypti.
" Fœniculi.
Oleum Gaultheriæ.
" Hedeomæ.
" Juniperi.
" Lavandulæ.
" " Florum.
" Limonis.
" Menthæ Piperitæ.
" " Viridis.
" Myrciæ.
" Myristicæ.
" Picis Liquidæ.
" Pimentæ.
" Rosæ.
" Rosmarini.
" Rutæ.
" Sabinæ.
" Santali.

Oleum Sassafras.	Oleum Terebinthinæ.
" Sinapis Volatile.	" Thymi.
" Succini.	" Valerianæ.

For convenience of comparison I give the list of officinal fixed oils. They are

Oleum Adipis.	Oleum Phosphoratum.
" Amygdalæ Expressum.	" Ricini.
" Gossypii Seminis.	" Sesami.
" Lini.	" Theobromæ.
" Morrhuæ.	" Tiglii.
" Olivæ.	

RESI'NA.—*A resin* is a resinous principle obtained by precipitation with water, from a tincture. They are

Resina Copaibæ.	Resina Podophylli.
" Jalapæ.	" Scammonii.

OLEORE'SINA.—*An oleoresin* is an ethereal extract made by acting upon the crude drug by ether, or ether and alcohol. They contain, as the name implies, an oil and a resin. There are 6 officinal.

Oleoresina Aspidii.	Oleoresina Lupulini.
" Capsici.	" Piperis.
" Cubebæ.	" Zingiberis.

EXTRAC'TUM.—*An extract* is a solid or semi-solid, prepared either by evaporating the fresh juice, or by extracting the virtues of the drug with alcohol or

water, and evaporating this product to the proper consistency. The Ext. Colchici Radicis is made with Acetic Acid, and Ext. Colocynth Co. is a powder, made by mixing the simple extract powdered with other powders. In many cases also five per cent. of glycerine is incorporated with the extract. Of this very useful class there are 32 officinal.

Extractum Aconiti.	Extractum Hæmatoxyli.
" Alcœs Aquosum.	" Hyoscyami Alcoholicum.
" Arnicæ Radicis.	" Iridis.
" Belladonnæ Alcoholicum.	" Juglandis.
" Cannabis Indicæ.	" Krameriæ.
" Cinchonæ.	" Leptandræ.
" Colchici Radicis.	" Malti.
" Colocynthidis.	" Mezerei.
" " Comp.	" Nucis Vomicæ.
" Conii Alcoholicum.	" Opii.
" Digitalis.	" Physostigmatis.
" Ergotæ.	" Podophylli.
" Euonymi.	" Quassiæ.
" Gentianæ.	" Rhei.
" Glycyrrhizæ.	" Stramonii.
" " Purum.	" Taraxaci.

EXTRAC'TUM FLU'IDUM. — *A fluid extract* is a fluid preparation so made that one minim represents one grain of the crude drug. To this rule there is one exception, the Ext. Sarsaparillæ Co. Fl. (10-7.5). They all contain alcohol and some of them glycerine as a preservative. The Ext. Ergotæ Fl., and Ext.

Conii Fl. contain dilute hydrochloric acid, and the Ext. Aconiti Fl. contains Tartaric Acid.

There are more of the fluid extracts than of any other class of officinal preparations, viz. 79.

Extractum Aconiti Fluidum.
" Arnicæ Radicis "
" Aromaticum "
" Aurantii Amari "
" Belladonnæ "
" Brayeræ "
" Buchu "
" Calami "
" Calumbæ "
" Cannabis Indicæ "
" Capsici "
" Castaneæ "
" Chimaphilæ "
" Chiratæ "
" Cimicifugæ "
" Cinchonæ "
" Colchici Radicis "
" " Seminis "
" Conii "
" Cornus "
" Cubebæ "
" Cypripedii "
" Digitalis "
" Dulcamaræ "
" Ergotæ "
" Erythroxyli "
" Eucalypti "
" Eupatorii "
" Frangulæ "

Extractum Gelsemii Fluidum.
" Gentianæ "
" Geranii "
" Glycyrrhizæ "
" Gossypii Radicis "
" Grindeliæ "
" Guaranæ "
" Hamamelidis "
" Hydrastis "
" Hyoscyami "
" Ipecacuanhæ "
" Iridis "
" Krameriæ "
" Lactucarii "
" Leptandræ "
" Lobeliæ "
" Lupulini "
" Matico "
" Mezerei "
" Nucis Vomicæ "
" Pareiræ "
" Pilocarpi "
" Podophylli "
" Pruni Virginianæ "
" Quassiæ "
" Rhei "
" Rhois Glabræ "
" Rosæ "
" Rubi "

Extractum Rumicis Fluidum.		Extractum Stillingiæ Fluidum.	
" Sabinæ	"	" Stramonii	"
" Sanguinariæ	"	" Taraxaci	"
" Sarsaparillæ Comp.	"	" Tritici	"
" Sarsaparillæ	"	" Uvæ Ursi	"
" Scillæ	"	" Valerianæ	"
" Scutellariæ	"	" Veratri Viridis	"
" Senegæ	"	" Viburni	"
" Sennæ	"	" Xanthoxyli	"
" Serpentariæ	"	" Zingiberis	"
" Spigeliæ	"		

CONFEC'TIO.—*A confection* is composed of medicinal substances beaten up with sugar or honey, or both, until a thick mass is obtained. There are 2 confections officinal.

Confectio Rosæ. Confectio Sennæ.

TROCHIS'CUS.—*A troche* or lozenge is prepared by incorporating medicinal powders with sugar and a gum. They are meant to dissolve slowly in the mouth. 16 are officinal.

Trochisci Acidi Tannici.	Trochisci Magnesiæ.
" Ammonii Chloridi.	" Menthæ Piperitæ.
" Catechu.	" Morphinæ et Ipecacuanhæ.
" Cretæ.	
" Cubebæ.	" Potassii Chloratis.
" Ferri.	" Sodii Bicarbonatis.
" Glycyrrhizæ et Opii.	" " Santoninatis.
" Ipecacuanhæ.	" Zingiberis.
" Krameriæ.	

UNGUEN'TUM.—*An ointment.* These preparations

are made of various combinations of medicinal agents with lard and wax * or lard alone. They are meant for external application only. The number is 26.

Unguentum.
" Acidi Carbolici.
" " Gallici.
" " Tannici.
" Aquæ Rosæ.
" Belladonnæ.
" Chrysarobini.
" Diachylon.
" Gallæ.
" Hydrargyri.
" " Ammoniati.
" " Nitratis.
" " Oxidi Flavi.
" " Oxidi Rubri.
Unguentum Iodi.
" Iodoformi.
" Mezerei.
" Picis Liquidæ.
" Plumbi Carbonatis.
" " Iodidi.
" Potassii Iodidi.
" Stramonii.
" Sulphuris.
" " Alkalinum.
" Veratrinæ.
" Zinci Oxidi.

CERA'TUM.—*A cerate* is similar to an ointment, but is of firmer consistency. There are 8.

Ceratum.
" Camphoræ.
" Cantharidis.
" Cetacei.
" Extracti Cantharidis.
Ceratum Plumbi Subacetatis.
" Resinæ.
" Sabinæ.

SUPPOSITO'RIA.—*Suppositories* are conical bodies made for introduction into the rectum or vagina. They have as a basis, oil of Theobroma, which melts at the temperature of the body. There are no

* Ungt. Aq. Rosæ contains spermaceti and white wax, the Ungt. Picis Liq. is made with suet, the Ungt. Diachylon with olive oil, and the Ungt. Hydrg. Nitrat. with lard oil.

officinal formulæ, but the U. S. Pharmacopœia directs that they should be made to weigh one gramme, or fifteen grains, each.

EMPLAS'TRUM.—*A plaster* is made by spreading certain solid substances, with the aid of heat, on leather, muslin, or other suitable material. They are adhesive at the temperature of the body. There are 17 members of this class.

Emplastrum Ammoniaci.	Emplastrum Hydrargyri.
" " cum Hydrargyro.	" Ichthyocollæ.
" Arnicæ.	" Opii.
" Asafœtidæ.	" Picis Burgundicæ.
" Belladonnæ.	" " Canadensis.
" Capsici.	" " cum Cantharide.
" Ferri.	" Plumbi.
" Galbani.	" Resinæ.
	" Saponis.

CHAR'TA.—*A paper* * is a medicated sheet of paper for external use. 3 are officinal. Those are :

Charta Cantharidis. Charta Potassii Nitratis. Charta Sinapis.

COLLO'DIUM.—*A collodion* is a solution of gun cotton in ether. 4 are officinal.

Collodium.	Collodium Flexile.
" cum Cantharide.	" Stypticum.

LINIMEN'TUM.—*A liniment* is a liquid preparation for external use. Most of them contain soap or some kind of oil. There are 10 officinal.

* Distinguish from *chartula*, a little package or paper of a medicinal powder, such as are ordered in prescriptions.

Linimentum Ammoniæ.	Linimentum Chloroformi.
" Belladonnæ.	" Plumbi Subacetatis.
" Calcis.	" Saponis.
" Camphoræ.	" Sinapis Comp.
" Cantharidis.	" Terebinthinæ.

OLEA'TUM.—*An oleate* is a solution of a medicinal substance in oleic acid. 2 are officinal.

Oleatum Hydrargyri. Oleatum Veratrinæ.

MAS'SA.—*A mass* is a combination of medicinal agents, made of a proper consistency for making into pills, which can be ordered to be of any desired weight. There are 3 officinal.

Massa Copaibæ. Massa Ferri Carbonatis. Massa Hydrargyri.

PIL'ULA.—*A pill* is a small spherical body containing certain medicinal agents. The officinal pilulæ are pills of a certain composition and weight which are kept ready made. There are 15 officinal formulæ.

Pilulæ Aloes.	Pilulæ Ferri Compositæ.
" " et Asafœtidæ.	" " Iodidi.
" " et Ferri.	" Galbani Comp.
" " et Mastiches.	" Opii.
" " et Myrrhæ.	" Phosphori.
" " Antimonii Comp.	" Rhei.
" " Asafœtidæ.	" " Compositæ.
" " Catharticæ Comp.	

ABSTRAC'TUM.—*An abstract* is a preparation in form of a powder, possessing twice the medicinal

strength of the crude drug. There are 11 officinal abstracts.

Abstractum Aconiti.	Abstractum Jalapæ.
" Belladonnæ.	" Nucis Vomicæ.
" Conii.	" Podophylli.
" Digitalis.	" Senegæ.
" Hyoscyami.	" Valerianæ.
" Ignatiæ.	

PUL'VIS.—*A powder* is any drug reduced to a state of minute subdivision by pulverization. The Pharmacopœia gives 9.

Pulvis Antimonialis.	Pulvis Ipecacuanhæ et Opii.
" Aromaticus.	" Jalapæ Compositus.
" Cretæ Compositus.	" Morphinæ Comp.
" Effervescens Comp.	" Rhei Compositus.
" Glycyrrhizæ Comp.	

TRITURA'TIO.—*A trituration* is an active substance rubbed up to a state of most minute subdivision with Sugar of Milk. They contain ten per cent. of the active substance. The formula given by the U. S. Pharmacopœia for the manufacture of triturations is :

The medicinal substance.....	10 parts.
Sugar of milk.....	90 "
	100

There is one trituration named in the Pharmacopœia.

Trituratio Elaterini.

It will be noticed that there are often two prepa-

rations of the same class. These are distinguished either by some word referring to their difference of character, as the Extractum Glycyrrhizæ and the Extractum Glycyrrhizæ Purum, or where other substances are added, by the addition of the word Compositus, as Syrupus Scillæ and Syr. Scillæ Compositus.

II. Non-Officinal Preparations.—Besides the preparations of the U. S. Ph. there are others in common use, a knowledge of which is very convenient. Among them are :

En'ema.—*An Enema or Clyster* is a liquid for injection into the rectum. There are six officinal in the Br. Ph.

Dis'cus.—*A Disk* is a small rounded scale of gelatine impregnated with some medicinal substance. They are sometimes employed by oculists for introducing atropia, etc., into the eye.

Gran'ulum.—*A Granule* is a very small pill. They generally contain only active principles or very active drugs.

Dragee.—*A Dragée* is a sugar-coated pill. They are mostly French in their origin.

Bou'gia.—*A Bougie* is a small cylinder of cacao butter, impregnated with some active substance, intended for introduction into certain canals of the body, such as the male urethra, and uterine cavity. They are usually of the diameter of a No. 9 catheter and about 2 inches long.

PESSA'RIA.—*Pessary* is the name given to a vaginal suppository.

GLYCECOLS.*—*Glycecol or Jelly Troches* are remedies made up with *Glycecolloid* (a mixture of Gelatine or Isinglass and Glycerine), in a form similar to the officinal Troches. They are either for local effect or for the internal administration of medicines. They are not commonly used.

In ordering any of these preparations, as there are no officinal formulæ, it is necessary either to write out the formula in full or else to indicate the name of the manufacturer whose particular formula is desired, e. g., ℞. Elixir Ferri et Quininæ (Jones & Co.) ℥ iv.

* See "A Formulary of Selected Remedies," Kirby, London.

CHAPTER IV.

THE GRAMMATICAL CONSTRUCTION OF A PRESCRIPTION.

As has been already indicated, the names and quantities of the ingredients of a prescription, as well as the directions to the compounder, are generally written in Latin. This has been the custom from time immemorial. It is not, however, imperative; and if the physician so desire he may use English, or any other language more likely to be understood. This is rarely done. The use of Latin is so firmly fixed by custom and habit, and has so many advantages, that its disuse would be a step backwards. Still there are some who decry it, and even accuse the profession of being pedantic, and of seeking to throw an air of mystery around this very simple act, by which to unduly impress their patients. The arguments in favor of Latin are strong enough to overcome all objections, and to fully warrant the practice. Latin is a dead language, and consequently is fixed, crystallized. as it were, beyond all chance

of change. In this respect it possesses great advantages over the vernacular. Again, Latin is universally studied and more or less understood; and is moreover the language of science throughout the world.

The botanical and chemical names of all our medicines are in Latin, and it is therefore the language employed in the nomenclature of all Pharmacopœias. The advantages of fixed and unchangeable names for our medicines are at once apparent, when we see to how many plants the same name is given in different parts of the country. No less than five different medicinal plants are called *snake-root*, all having different actions and belonging to different therapeutical groups. *Wintergreen* applies equally to Gaultheria and Chimaphila. There are other and even more striking instances of the same thing.

There are other reasons which may be urged in favor of Latin as the language of prescriptions. Our prescriptions are often carried to distant lands, where, if written in English, they would not be likely to be understood, so that the patient might die before they could be translated; but where every druggist's clerk can decipher them if correctly written in Latin. Again, it may be for the advantage of a patient not to know what he is taking. People often become possessed with the idea that they cannot take this or that drug, the very drug perhaps which it is advisable for them to take. Now while such ideas are

always to be respected if they are well founded, they may often be shown to be the result of silly or ill-founded prejudices. To overcome these prejudices we may labor in vain; but we accomplish the same thing by concealing the dreaded drug in some mixture or pill, with a long Latin name, much to the benefit of our unsuspecting patient.

Latin then being the language of prescriptions, it behooves all students to master at least its rudiments. It is no part of my plan to write a Latin grammar,* for the benefit of those whose education is defective in this respect. I shall presume that my readers are familiar, at least with the declensions and simple rules of syntax, and shall only give a few rules, which may serve to call to mind the general principles already learned.

RULE 1st. The noun expressing the name of the medicine, is put in the genitive case, when the quantity of it to be used is expressed.

RULE 2d. If no quantity is expressed, but only a numeral adjective follows, the noun is put in the accusative.

RULE 3d. The quantity is put in the accusative case governed by the imperative *Recipe.*

RULE 4th. Adjectives agree with these nouns in gender, number, and case.

* Those not familiar with the rudiments of Latin will find great assistance in a careful study of the most excellent little book by Dr. F. R. Gerrish, on "Prescription Writing. Designed for the use of medical students who have never studied Latin."

There are a number of other rules which come in use occasionally, but as we now write the directions to the patient in English, the amount of colloquial Latin to be written is so very limited, that their application is very infrequent.

In actual every-day practice we hardly ever have occasion to apply all of the rules given, as the accusative of the quantity is rarely written, being expressed rather by the more convenient symbols. The only real difficulty is the formation of the Genitive case. The following subjoined rules will aid very much in overcoming this difficulty, and should be carefully committed to memory. They apply to pharmacopœial nouns only.

RULES FOR FORMATION OF GENITIVE CASE.

RULE 1st. All nouns ending in a, form the genitive in æ, as Quinina, Quininæ. Exceptions.—*Physostigma*, *Physostigmatis*, *Coca* is unchanged. *Folia* is plural, gen. Foliorum.

RULE 2d. All nouns ending in us, um, os, on, form the genitive in i, as Conium, Conii. Exceptions.—*Rhus*, gen. *Rhois*, *Flos*, gen. *Floris*, *Erigeron*, gen. *Erigerontis*, *Fructus*, *Cornus*, *Quercus*, *Spiritus*, do not change.

RULE 3d. All other nouns of whatever termination make the genitive in s, or is, *Chloral*,

gen. *Chloralis.* Some lengthen the termination thus:

as	genitive	**atis,**	as	Acetas,	Acetatis.
is	"	**idis,**	as	Anthemis,	Anthemidis.
o	"	**onis,**	as	Pepo,	Peponis.
x	"	**cis,**	as	Cortex,	Corticis.

There are a few exceptions. *Asclepias*, gen. *Asclepiadis; Mas*, gen. *Maris; Phosphis, Sulphis, etc.* gen. *itis; Mucilago*, gen. *Mucilaginis; Solidago*, gen. *Solidaginis*, etc.

The following words * do not change in their *genitive*, *Amyl*, *Azedarach*, Berberis, *Buchu*, *Cajuputi*, Cannabis, *Catechu*, *Coca*, *Condarango*, Cornus, *Curare*, Fructus, Digitalis, Hydrastis, *Jaborandi*, *Kino*, *Matico*, Quercus, *Sassafras*, *Sago*, Sinapis, Spiritus.

We very seldom have occasion to use the accusative of the nouns expressing the ingredients, only when the quantity is omitted and an numerical adjective takes its place.

The accusative of the different words used to express quantity are seldom written, as has already been indicated, being generally expressed by the appropriate symbols. Sometimes, however, it is required to write them out in full, I therefore append

* Those in italics are indeclinable, those in us are of the 4th declension; the others are of the 3d. Apiol and Sumbul are given as indeclinable by some authorities; Dunglison gives Apiolum, i, Sumbul, i; Amyl, Amylis is also given.

two simple rules for the formation of the accusative of these words. They apply, with a very few exceptions, to all nouns with the same endings.

RULES FOR THE FORMATION OF THE ACCUSATIVE CASE.

RULE 1. Nouns expressing quantity ending in **a**, are feminine, and make the accusative singular in **am** and the plural in **as**.

Example. Drachma, acc. sing. Drachmam, pl. Drachmas.

RULE 2. Those ending in **um** or **us**, make the accusative singular in **um**. The accusative plural of those in **us** is in **os**, and of those in **um** in **a**. Those in **us** are masculine, those in **um** are neuter—

Congius, acc. sing. Congium acc. pl. Congios.
Granum " " Granum " " Grana.

The adjectives are declined like the nouns. The numeral cardinal adjectives are indeclinable except unus, duo and tres.

They are thus declined :

	Masculine.	*Feminine.*	*Neuter.*
nom.	unus.	una.	unum.
gen.	unius.	unius.	unius.
acc.	unum.	unam.	unum.
nom.	duo.	duæ.	duo.
gen.	duorum.	duarum.	duorum.
acc.	duos.	duas.	duo.

	Masculine.	*Feminine.*	*Neuter.*
nom.	tres.	tres.	tria.
gen.	trium.	trium.	trium.
acc.	tres.	tres.	tria.

The cardinals are all regular.

The verbs are nearly all used in the imperative mood, being addressed to the compounder. Only a few prepositions are commonly used; they are *ad*, to; *ana*,* of each; *cum*, with; *in*, into; *ad* and *in* govern the accusative, *cum* the ablative and *ana* the genitive cases.

* Ana is Greek, the rest are Latin.

CHAPTER V.

THE PRINCIPAL WORDS AND PHRASES USED IN PRESCRIPTIONS, WITH THEIR PRONUNCIATION AND ABBREVIATIONS.

There are certain words and phrases used in prescriptions, a knowledge of which is all important. There are others, which are seldom used in this country, but which are so frequently met with in foreign books, that familiarity with them becomes a matter of great convenience. It would be very inconvenient, to say the least, to be obliged to refer to a dictionary before one could read an ordinary prescription in an English work. The *pronunciation* of these words is also of considerable importance; the mistakes which are commonly made, even by those of highest rank in the profession, being truly lamentable. Among the members of the Faculty of one of our metropolitan schools, no less than three pronunciations are given to the word *Podophyllum*,* while the word *enema* is almost invariably mispronounced.

* For pronunciation of the names of medicines, see Chap. VII.

In the following list I have tried to give only such words as may be of use, omitting many which are very seldom used. For a full list see "Pereira's Prescription Book."

Certain of these words are commonly expressed by abbreviations, as Griffiths puts it, either "from hurry laziness, or ignorance," and, I would add, convenience.

Latin Word.	Abbreviations.	Translation.
Abstrac'tum.	Abst.	An abstract.
Ac'idum	Acid.	An acid.
Ad.		To, up to.
Ad lib'itum	Ad lib.	At pleasure.
Adde	Add.	Add. (thou).
Ampul'la		A large bottle.
Ana	A. āa.	Of each.
Aqua,-bul'liens,	Aq.-bull.	Water,-boiling.
" fonta'na,-fervens,	" font.-ferv.	" spring,-hot.
" pluvia'lis	" pluv.	" rain.
" destilla'ta	" dest.	" distilled.
Aqua'lis		Pertaining to water.
Bene		Well.
Bis in dies	Bis.ind.	Twice daily.
Bulliat, bulliant	Bull.	Let boil.
Cape, Capiat	Cap.	Take. Let him take.
Cap'sula	Caps.	A capsule.
Cera'tum	Cerat.	A cerate.
Char'ta (*karta*)	Chart.	A paper (medicated).
Chartula (*kartula*)	Chart.	A little paper for a powder.
Cibus	Cib.	Food.
Cochleáre mag'num	Coch. mag.	A tablespoon.
Cochleáre par'vum	Coch. parv	A teaspoon.
Cola, Colatus	Col.	Strain. Strained.

Latin Word.	Abbreviations.	Translation.
Collyr'ium	Collyr.	An eye wash.
Colluto'rium	Collut.	A mouth wash.
Compos'itus	Co. Comp.	Compound.
Con'gius	C.	A gallon.
Confec'tio	Conf.	A confection.
Cor'tex	Cort.	Bark.
Cum		With.
Decoc'tum	Decoc.	A decoction.
Dilute, Dilu'tus	Dil.	Dilute (thou), diluted.
Dimid'ius	Dim.	One-half.
Div'ide	D. Div.	Divide (thou).
Dividen'dus	Dividend.	To be divided.
Divida'tur in partes æqua'les	D. in. p. æq.	Let it be divided into equal parts.
Do'sis	Dos.	A dose.
Emplas'trum	Emp.	A plaster.
En'ema	Enem.	An enema.
Exten'de Supra	Exten. Sup.	Spread upon.
Extrac'tum	Ext.	An extract.
Fac, fiat, fiant	F.	Make, let be made, let them be made.
Fil'trum, Filtra	Fil.	A filter. Filter (thou).
Flu'idus	Fl. f.	Fluid.
Gargaris'ma	Garg.	A gargle.
Glyceri'tum	Glyc.	A glycerine.
Gutta, Guttæ	Gtt.	A drop, drops.
Gutta'tim	Guttat.	Drop by drop.
Haus'tus	Haust.	A draught.
Hora	H. Hor.	An hour.
In dies	Ind.	Daily.
Infus'um	Inf.	An infusion.
Injec'tio	Inj.	An injection.
In'star	Inst.	Like (with genitive)
Lac		Milk.

Latin Word.	Abbreviations.	Translation.
Lage'na (Lajena)		A flask or bottle.
Libra	Lb. ℔	A pound, a Troy pound
Lin'teum		Lint.
Liquor, or Liq'uor	Liq.	A solution.
Lo'tio (*losheo*)		A lotion.
Mane primo	Mane pr.	Very early in the morning
Magnus	Mag.	Large.
Mas'sa	Mass.	A pill-mass.
Mica pa'nis (*mika*)	Mic. Pan.	A crumb of bread.
Misce	M.	Mix.
Mistu'ra	Mist.	A mixture.
Mucila'go	Mucil.	A mucilage.
Nox, Nocte Mane'que		Night, at night and in the morning.
Nu'merus, Numero	No.	A number, in number.
Octarius	O.	A pint.
Ovum, ovi	Ov.	An egg.
Pars	Par.	A part (governs genitive.)
Partes æqua'les	P. æ.	Equal parts.
Parvus	Parv.	Small.
Pedilu'vium		A foot-bath.
Penicil'lium Cameli'num	Penicil. Cam.	A camel's-hair pencil or brush.
Per fis'tulam vit'ream		Through a glass tube.
Phia'la	Phil.	A vial.
Pil'ula	Pil.	A pill.
Pro re nata	P. r. n.	According to circumstances, occasionally.
Pul'vis	Pulv.	A powder.
Quantum Suffic'iat	Q. S. (*followed by genitive*)	As much as is necessary
Quâquâ horâ	Q. h.	Every hour.

Latin Word.	Abbreviations.	Translation.
Satura'tus	Sat.	Saturated.
Scat'ula	Scat.	A box.
Semis'sis	Ss.	A half.
Semidrach'ma	Semidr.	A half drachm.
Sesun'cia	Sesunc.	An ounce and a half.
Sig'na	S. Sig.	Sign.
Sine		Without.
Solve, Solu'tus	Solv.	Dissolve, dissolved
Solu'tio	Sol.	A solution.
Spir'itus	Spr.	A spirit.
Sta'tim	Stat.	Immediately.
Supposito'ria	Suppos.	A suppository.
Syru'pus	Syr.	A syrup.
Talis	Tal.	Such, or, like.
Tinctu'ra	Tra., Tr	A tincture.
Trochis'cus (*Trokiscus*)	Troch.	A troche.
Trit'ura	Trit.	Triturate.
Tere Simul	Ter. Sim.	Rub together.
Ter in die	T.i.d.	Three times a day,
Unguen'tum	Ungt.	An ointment.
Vi'num	Vin.	A wine.
Vehic'ulum	Vehic.	A menstrum.
Vitel'lus	Vit.	The yolk (of an egg).
Vitello ovi Solutus	V. O. S.	Dissolved in the yolk of an egg.

Besides the abbreviations already given, it is customary to abbreviate the names of drugs, for example, *Quinina* is abbreviated to *Quin.; acidum carbolicum* to *acid. carbol.* Nearly all writers on this subject condemn the use of abbreviations as altogether bad; nevertheless, the profession go on using them and probably will do so as long as prescrip-

tions are written: and with reason. Some words are just as well understood by a short and concise abbreviation as if they were written out in full. But that the practice is capable of abuse, and is often greatly abused, is only too evident. Some of the abbreviations often used are entirely inexcusable, and, says Griffiths, "are productive of direful errors," especially when joined with the proverbially indistinct writing of most medical men. In order that these mistakes may be avoided, prescribers should make it a RULE *always to write out a word in full, if there is a possible chance that the abbreviation may be misunderstood.*

Prescriptions must be written as if for the stupidest and most ignorant of apothecaries' clerks.

The amount of extra time thus consumed is of very little consideration, when we think that perhaps the life of a human being depends upon it; to say nothing of the amount of time often lost in trying to make out what is meant, or in hunting up the writer for an explanation.

The truth is, improper abridgments owe their existence, as Gerrish very justly remarks, less frequently to lack of time, than to ignorance, and are therefore all the more inexcusable.

The following list, abridged from *Pereira*, shows the ABBREVIATIONS WHICH SHOULD BE AVOIDED.

Acid. Hydroc.	{ Acidum Hydrochloricum, or Acidum Hydrocyanicum.

Aq. Fortis may be read aq. Fontis.

Ext. Col. { Extractum Colchici, or
Extractum Colocynthidis.

Hydra. Chlor. { Hydras Chloralis, or
Hydrargyri Chloridum.

Hydr. Bic. { Hydrargyrum Bichloridum, or
Hydrargyrum Bicyanidum.

Sulph. { Sulphur.
Sulphuretum.
Sulphas.

There are a number of others, but they are so very uncommon as to be hardly worth mentioning.

Pereira relates a number of instances where mistakes have occurred with nearly all these abbreviations. *Observe* that the proper abbreviation for pilula is *pil*, and not *pill*; *gttae* for drops and not *gtts*, unless the accusative *guttas* is meant. *Gr.* is the proper abbreviation for the plural of *granum*, and not *grs.*, as the accusative plural ends in *a*.

As regards pronunciation, I will say a few words only. In Latin every syllable is pronounced; and, if we follow the English method, the letters have nearly the same sounds as in English. c and g before *a*, *o*, *u*, and consonants, are hard; before *e*, *i*, and *y*, they are soft, c sounding like s and g like j. c before *æ* and *œ* is soft. Ch is usually pronounced hard, like k, as in chenopodium (*ken*), mastiche (*mastike*), &c. Colchicum is, by habit rather than by any rule, pronounced *koltchecum*. As to the accent, I have preferred to give the accent of each word as near as possible, rather than to burden the mind of

the student with rules, which are never remembered when it is time to apply them. It may be well to remember, that in all words of two syllables the accent is always on the first. Attention is particularly asked to the pronunciation of the following words which are very commonly mispronounced—ace′tas, at′ropa, bary′ta, bro′midum, cam′phora, chimaph′ila (*kima*), chlo′ridum, codei′na, coni′um, en′ema, hyoscy′amus, io′didum, ox′idum, podophyl′lum, radi′cis, ric′inus, sina′pis.

CHAPTER VI.

THE FORMS FOR EXTEMPORANEOUS PRESCRIPTIONS, WITH EXAMPLES.

Besides the different officinal preparations, any of which may be prescribed separately, we are in the habit of combining, as has already been indicated, various drugs and preparations in order to get new or modified actions, or to get more pleasing and convenient forms.

To the principles of medicinal combinations a separate chapter is devoted; at present I only wish to indicate the different forms which these combinations may take, the drugs or preparations proper for each form, and the methods of writing prescriptions for them.

Pills.

Pills are little rounded masses of semi-solid consistency, and are intended to be swallowed whole. From the nature of things only certain substances can be made into the pill form. These are

1 Substances the dose of which is small, as the alkaloids.

2. Vegetable extracts and powders, resins, metallic salts, etc. We also use the pill form to administer

3. Drugs having a very bad taste.

4. Substances intended to act slowly.

5. Insoluble substances too heavy for suspension in fluids.

Certain substances cannot or should not be made into pills.

1. Substances whose dose is large.

2. Deliquescent or efflorescent salts (*the latter unless dried.*)

3. The fixed oils, except croton; and volatile oils exceeding one-half a drop to each pill.

4. Those intended to act at once as emetics and stimulants.

5. Caustic substances, except in minutes doses, well diluted and thoroughly mixed with the vehicle.

The choice of an excipient may sometimes be left to the apothecary; but, should such a course not be deemed advisable, we may choose such an one as is most suitable for the ingredients of the proposed pill. Some of those commonly used are VEGETABLE EXTRACTS. Certain ones do not require any excipient when ordered alone. They also make good excipients for powders. If too hard they can be moistened with alcohol or glycerine.

SYRUP AND HONEY are used as excipients for

powders. Sugar reduces calomel and should not be combined with it if the pills are to be kept any length of time.

Confection of Rose is suitable for powders, but contains tannin.

Soap is well adapted for fatty substances and for resinous bodies. It should not be used with substances which are decomposed by an alkali, nor with tartar emetic.

Glycerine with Gum Tragacanth and the *Glycerite of Starch* (Bh. P.) are very valuable excipients, as the pills made with them never get hard and insoluble.

Alcohol is valuable to soften camphor, Ex. Colocynth Comp., gums, vegetable extracts, etc.

Volatile oils and Mucilage are very poor excipients. The pills made with them soon dry and become very hard.

Dry Powders are combined with oils and other moist substances to give them the proper consistency, and are also put around pills to keep them from sticking together. The principal powders used for this purpose are powdered liquorice root, starch, etc.

The *Mineral acids* will make the Sulphate of Quinine into a pill mass if added slowly.

A *Crumb of bread* makes a good excipient for croton oil.

Copaiba should not be prescribed in pill form.

Chloral and Camphor liquefy when mixed.

Nitrate of Silver can be made into pills with gum arabic; if combined with the vegetable extracts or glucose it is likely to explode.

The Officinal Pills may be ordered simply by name. If, for example, we desire to order some compound iron pills, which are officinal, and are therefore supposed to be found ready prepared in every shop, we first set down the sign for *Recipe*, then the name of the pills, and in the same line the number to be dispensed. According to rule 3, page 35, the name of the medicine is here put in the accusative and not in the genitive; for, there being no noun expressing weight or measure to stand as object to *Recipe*, the name of the medicine takes its place. *Ferri* remains in the genitive, being governed by *Pilulas*. Below this must be put the directions to the patient, there being no further directions to the apothecary necessary, the writer's name and address, and date. The name of the patient may also be added, as follows:

℞. Pilulas Ferri Compositas sexdecim.
Signa. Take one pill after each meal.
For Mr. Eger. James Medicus, M.D.,
15th Feby., 1877. 100 Broadway.

There are in the prescription thus written a number of words which might be safely and conveniently

abbreviated or expressed by their appropriate symbols. Thus abbreviated it would read,

℞. Pil. Ferri Comp., xvi.
Sig. Take one pill after each meal.
For Mr. Eger. J. Medicus, M.D.,
15, 2, 77. 100 Broadway.

In case we wish to order pills to be made of one of the masses, the mode of writing is somewhat different. As we must indicate the amount of the mass required, *massa* is put in the genitive case. We must also direct the dispenser to divide it into a certain number of pills. Written out in full the prescription would read as follows :

℞. Massæ Ferri Carbonatis drachmam.
Divide in pilulas quindecim.
Sig. Two pills after each meal.
Name, etc.

In the directions to the druggist, *divide* is in the imperative mood, and *pilulas* is the accusative, governed by *in*.

Now, suppose that we desire to order some pills, each one to contain one-half a grain of the extract of nux vomica, one grain of powdered scammony, and three-quarters of a grain each, of powdered aloes and rhubarb. The first step as before is to set down

the sign ℞, and then the names of the medicines expressed in Latin and in the genitive case, allowing a line for each. In order that these substances may be conveniently made into a pill-mass, there must be something to give them sufficient cohesion. This, the extract of nux vomica will do, provided it is softened; and this can be accomplished by the addition of a little alcohol. We add alcohol then to the list. We must next decide how many pills we desire to have made; having done this, we set it down at once in the form of an order, to divide the whole into so many pills, let us say 12. This direction must be preceded by the word *misce* or "mix."

To obtain the amount of each ingredient required we must multiply the dose we desire to give by 12, the number of pills or doses; this gives us respectively 6 (12×½), 12 (12×1), and 9 (12×¾) grains, which must be set down each on its proper line, the words expressing it being put in the accusative case. As equal amounts of aloes and rhubarb are required, we may save time and trouble by using the word *ana* (of each) opposite the latter and then write the quantity but once. As the amount of alcohol required depends on circumstances, we may safely leave it to the judgment of the apothecary, and indicate it by the use of the expression *quantum sufficiat*, which also governs the genitive. Having done this, the directions to the apothecary being already down, we have but to add the directions to the patient;

this, of course, being preceded by the word *signa*, the names, date, etc., and the prescription is complete, as follows:

℞. Extracti Nucis Vomicæ, grana sex,
Pulveris Scammonii, grana duodecim,
Pulveris Aloes,
Pulveris Rhei, ana grana novem,
Alcoholis, quantum sufficiat.

Misce et fiat massa in pilulas duodecim dividenda.

Signa. One pill to be taken at night.

Signature, etc.

Written with abbreviations and symbols, it would read—

℞.	Ext. Nuc. Vom.	gr. vi.
	Pulv. Scammon.	gr. xii.
	" Aloes,	
	" Rhei, aa.	gr. ix.
	Alcohol,	q. s.

M. et ft. mas. in pil. xii, dividen.

Sig. One pill, etc.

Either the form for the directions to the apothecary here given, "mix and make a mass to be divided into 12 pills," or the one given above, or one of several others, may be used.

There is still another way in which this prescription may be written. Place only the amount required for one pill opposite each ingredient and then

direct the apothecary to make twelve such pills, thus.

℞. Ext. Nucis Vomicæ, grani semissem (gr. ss.)
Pulv. Scammonii, granum (gr. i.)
" Aloës,
" Rhei, ana grani tres quartas partes (gr. ¾)
Alcoholis, quantum sufficiat.
M. Fac pilulas tales duodecim.
Sig. As before.

In this way we direct the compounder to compute the amount of each ingredient required for the 12 pills from the dose given for one, thus throwing upon him an additional responsibility and leaving chances for mistakes which might just as well be avoided. This method is not therefore to be recommended. It has, however, one advantage which should cause its adoption by all medical authors, viz.: that of allowing the reader to see at a glance, without being obliged to go through an often tedious preliminary calculation, the amount of each ingredient in a dose. In order to cover the taste it is customary to coat pills with certain substances, such as gelatine or sugar. This cannot be done in the case of extemporaneous formulæ, as it would take too long. Pills can, however, be readily and easily coated with silver or gold-foil, which answers the same purpose In order to have this done we must write after the

directions to the druggist the words '*Deaurentur pilulæ.*' Pills may also be covered with fine tissue paper or wafer paper. Perhaps the best way is to direct that the pills shall be placed in gelatine capsules. In that case we substitute *capsula* for *pilula*, and write

M. Et divide in capsulas duodecim.

MIXTURES.

Mixtures are compounds in which fluid preparations are mixed, or in which solid substances are dissolved or held in suspension by an appropriate vehicle. They are for internal administration in divided doses.

Substances suitable for use in a mixture are all fluid preparations; all salts which are soluble in water either alone or by the aid of some other substance (quinine by an acid); those salts which can be diffused by agitation, also substances which are miscible by trituration and such as can be suspended by the aid of viscid excipients. Of course the relations of the drugs to each other must be carefully studied so as to avoid mixing substances which are incompatible (see chap. X.). Mixtures should be of a proper consistency. One fluid-ounce should hold ℥iss. of a vegetable powder and ʒi. of an extract. The vehicles for a mixture are syrups and glycerine generally diluted, water medicated or simple, infusions and decoctions, and mucilage. In or

der to disguise the taste we may add various agents having strong and pleasant flavors, such as the tinctures and spirits of the aromatics, various syrups, or some of the essential oils. In case the oils are added they must be mixed with syrup or glycerine, or rubbed up with sugar.

Emulsions are mixtures formed by the minute subdivision and suspension of an oil or a resinous substance in water by the aid of some excipient. For making an emulsion of a resin we use a gum; with a gum-resin water alone is necessary. For an oil we use either mucilage of Acacia, mucilage of Tragacanth, Yolk of egg, or Liquor Potassæ, or some other strong alkali. The acacia and egg are those most commonly used. An emulsion made with egg will not keep long. The amount of mucilage to be used varies with the oil. With castor oil one part of mucilage to four of oil is enough; with the volatile oils more mucilage is required. Soluble salts should not be added to emulsions and not more than one ounce of a tincture* made with dilute alcohol should be added to four ounces of an emulsion made with mucilage or egg, as alcohol precipitates the mucilage and egg. Acids are incompatible with mixtures emulsified by an alkali.

The following examples illustrate the manner of writing for a mixture and an emulsion. The Officinal Mixtures are prescribed in the same manner as

* Dr. E. Saunders's New Remedies, vol. 4, page 56.

the Officinal Pills, by simply indicating the names, amounts, dose, etc.

Suppose we desire a mixture to contain in each dose 2 grs. of quinine, $\frac{1}{20}$th gr. of strychnine, 10 ♏. of dilute hydrochloric acid, with tincture of ginger, compound tincture of cardamom and syrup to flavor it, and water to make up the bulk. As before, we begin with the sign ℞, and then write down the names in order. Next we have to decide on the size of the mixture. In this we must be governed by the amount which is likely to be required. If only a few doses, it is absurd to order a six or eight ounce mixture, or if on the contrary, the patient is to take the medicine for a long time we should not order too small a quantity. It presents a much more elegant appearance to have the bottle filled. To this end we must order an even number of ounces either 1, 2, 4, 6, or 8, as there are no bottles made to contain 7 and 5 ounces, and 3 ounce bottles are not always to be had. We will make then a 4 oz. mixture, the dose of which shall be ½ oz. or a tablespoonful (about). This will give us eight doses ; multiplying the dose of each ingredient by 8 gives us the whole amount required. The vehicle water remains ; of this we require just enough to make up the mixture to ℥iv, or ℥i, ℥ii, ♏. x. The ten minims we may disregard. We then add the directions to the apothecary, signature, date, etc., thus :

℞. Quininæ Sulphatis, grana sexdecim.
Strychninæ Sulphatis, grani duas quintas partes.
Acidi Hydrochlorici Diluti, minima octoginta.
Tincturæ Zingiberis, drachmas duas.
Tincturæ Cardamomi Compositæ, drachmas duas cum semisse.
Syrupi, uncias duas.
Aquæ, unciam et drachmas duas.
M. Fiat mistura.
Sig. One tablespoonful after each meal.

Abbreviated, it would read

℞.	Quin. Sulph.,	gr. xvi.
	Strych. Sulph.,	gr. ℈.
	Acid Hydrochlor. Dil.,	♏. lxxx.
	Tr. Zingib.,	ʒ ii.
	Tr. Card. Co.,	ʒ ii ss.
	Syrupi,	ʒ ii.
	Aquæ,	℥ i, ʒii.

M, etc.

Instead of going through a troublesome calculation to find out the amount of water required, we may write the word *ad* after *aquæ* and then put down ʒiv. The meaning of this is that the apothecary is to make the whole quantity up to four ounces after the other ingredients are in. This he does by simply filling up the measuring glass or bottle with the water to the required amount. The only danger is that he may overlook or not understand the use of the word *ad* and put in four ounces of water, as in

an instance mentioned by Gerrish. In order to avoid mistaking the *ad* for a badly written aa (for ana) it is customary to put a dash under it, thus, *ad*, the *aa* always having a line over it *aa*.

In case *ad* is used, the noun preceding it must be put in the accusative case, there being no quantity to govern it, or it may remain in the genitive, and the expression *quantum sufficiat* be employed, *quantum* being always followed by the genitive.

The following is the formula for a much used emulsion of cod-liver oil:

℞. Vitellum unius,
Olei Morrhuæ, uncias duas.
Vini Xerici, unciam cum semisse.
Acidi Phosphorici Diluti, drachmas tres.
Syrupi, drachmas quinque, [uncias octo.
Aquæ Amygdalæ Amaræ, quantum sufficiat ad
M. Et fiat emulsio.
Sig. Dose, a tablespoonful.

Notice that *Vitellum* is in the accusative, there being no noun of quantity to govern it. Written with abbreviations and the *ad*, we have

℞. Vitel. uni,
Ol. Morrhuæ, ℥ ii
Vin. Xerici, ℥ iss.
Acid. Phosphor. Dil. ʒ iii.
Syrupi, ʒ v.
Aq. amygd. amar., ad ℥ viii.
M., et fiat emulsio.

Elixirs.

Elixirs may be ordered as extemporaneous preparations, there being nothing different in the mode of writing for them from that employed in writing for other mixtures, for example—

℞. Pepsinæ, grana centum et viginti et octo.
Vini Xerici, uncias septem.
Syrupi, unciam.
Extracti Zingiberis Fluidi, guttas octo.
M. Fiat Elixir.
Sig. Dose, one teaspoonful.

Draughts.

A draught differs from a mixture in containing only a single dose. They are very little used. ℥ iss. is the proper amount for a draught. The following is the formula for the famous "Black Draught."

℞. Magnesiæ Sulphatis, drachmas duas.
Infusi Sennæ, fluidunciam.
Syrupi Zingiberis, fluidrachmas duas.
Misce. Fiat Haustus.
Sig. The draught, to be taken at once.

Drinks (Potus).

We often desire to order medicines in a fluid form where a regular mixture would not be easily taken. We may then make use of a "Drink," a form which is at once pleasing to the taste, especially if fever be present, and less objectionable in idea than a regular medicine. The substances which are most

commonly used in this form are mineral acids, and the Salts of Potash and Soda. They must be sweetened and flavored and well diluted. Sometimes they are made to effervesce. In that case the salts can be ordered in the form of powders, to be mixed when required.

The following is the formula for the well-known "Imperial Drink."

℞. Potassii Bitartratis, drachmas duas.
Olei Limonis, minima quinque.
Aquæ Bullientis, q. s. ad uncias viginti.
M. Fiat Potus.

Powders.

In this form we can prescribe vegetable powders or such vegetable drugs as can be powdered, certain salts, acids, metals, most alkaloids, and glucosides, and certain extracts. The substances which are not suited to this mode of administration are deliquescent salts and very volatile substances, and those which liquefy when mixed, as chloral and camphor, or acetate of lead and Sulphate of Zinc. Chlorate of Potassium will explode when rubbed in a mortar with sugar, tannic acid or similar substances. If the substance is active, or the dose small, some inert powder should be added to give it bulk enough to enable it to be easily handled. Such powders are sugar of milk, powdered white sugar, powdered liquorice, aromatic powder, powdered acacia, etc. Some substances cannot be easily powdered without

the addition of some other body. Opium requires a hard substance like the sugar of milk, camphor requires a little alcohol, myrrh needs sugar or gum, etc.

The following salts are deliquescent :

Ammonii Nitras.	Potassa.
Calcii Chloridum.	Potassii Acetas.
Lithii Citras.	" Carbonas.
Zinci Chloridum.	" Citras.

Powders are prescribed in two ways ; either the powder is ordered to be dispensed in bulk and a certain quantity directed to be taken at a dose ; or it is ordered to be divided into a certain number of doses, each to be contained in a separate paper (*Chartula.*)

An officinal powder, Dovers powder for example, is thus ordered :

℞. Pulveris Ipecacuanhæ et Opii drachmam.
Divide in chartulas (*vel* capsulas), duodecim.
Sig. One to be taken at night and repeated if required.

The following is the formula for the compound liquorice powder :

℞. Pulveris Sennæ,
" Glycyrrhizæ, ana uncias duas.
" Fœniculi,
Sulphuris Loti, ana unciam.
Pulveris Sacchari Albi, uncias sex.
Misce, et pulve bene.
Sig. Dose, one teaspoonful.

The Pulvis Effervescens Comp. is already divided into powders or papers containing a certain amount, and are to be ordered simply by specifying the number wanted.

Confections and Electuaries.

These preparations are very little used at present. They consist of medicinal powders beaten up to the consistency of a thick paste, with sugar, honey, or molasses. There is nothing special about the method of prescribing them. The following will serve as an example. It is the famous "Chelsea Pensioner."

℞. Sulphuris Loti, uncias duas.
Potassii Bitartratis, unciam.
Pulveris Rhei, drachmas duas.
Guiaci Resinæ, drachmam.
Mellis Despumati, libra.
Myristicam pulverizatam, unam.
M. Fiat Electuarium.
Sig. Dose, one tablespoonful night and morning.

Troches.

These are very seldom ordered to be made up according to extemporaneous formulæ. There are a few officinal, and besides there are a great many in the market, made according to certain well-known formulæ, or according to private receipts. Those made according to the Pharmacopœia of the London Throat Hospital, are now much used in this city, and are kept ready prepared by several druggists. The basis is black currant paste.

The Rhatany lozenges are useful and not unpleasant. The formula is

℞. Extracti Krameriæ, grana centum et quinque.
Pulveris Tragacanthæ, grana septem.
Sacchari Albi, grana viginti octo.
Black Currant Paste, q. s. (about ℥ix.)
M. Divide in trochiscos triginta quinque.
Sig. One lozenge every 3 or 4 hours, to be dissolved slowly in the mouth.

Gargles.

Gargles are liquid preparations for application by the patient to the back part of the mouth or pharynx. They should not contain any very powerful drug, which, if swallowed, might do harm, neither should they have a too powerful local action, or contain agents which are likely to injure the teeth. The mode of writing for them does not differ at all from that of writing for a mixture, only the dose is not considered, but rather the percentage of the active ingredients. Example.

℞. Acidi Tannici, drachmas duas.
Potassii Chloratis, drachmam.
Glycerini, unciam.
Aquæ, uncias septem.
M.
Sig. Use as a gargle every two hours.

Vapors and Inhalations.

These are medicines reduced either to the form of a very fine spray, or to a vapor or gas, and are to be inhaled or thrown into the mouth, in order that they may act upon the mucous membrane of the

respiratory tract. Special apparatuses are required for some forms of inhalation. There is nothing peculiar about the prescriptions for them.

℞. Olei Cubebæ, drachmas duas.
Magnesii Carbonatis, drachmam.
Aquæ, uncias tres.
Misce.

Sig. A teaspoonful in a pint of water at 150° F. for each inhalation.*

INJECTIONS.

Injections are fluid preparations intended to be thrown into one of the cavities of the body by a syringe. The strength of an injection varies very much with the cavity for which it is intended. The nasal cavity, the male urethra and the bladder are very susceptible, while the mouth, vagina, and ear will bear much stronger applications.

An injection which is intended to be thrown into the rectum is called an *en'ema*, *clyster* or *lavement*.

Enemas are used for a number of different purposes.

1. To get a local effect on the rectal mucous membrane.
2. To excite the peristaltic action of the intestines and an expulsion of their contents.
3. To dissolve impacted fæces.
4. To mechanically distend the bowel.

* Use—"A most valuable stimulant, especially in laryngorrhæa."

5. To remove parasites.
6. To obtain the absorption of a medicine.
7. To afford nourishment to the system.

Most enemas are made up by the attendant at the time of giving. We may be called upon sometimes to write prescriptions for enemas to accomplish the objects mentioned under the heading 1, 4, 5 and 6.

For local effects.—To accomplish this object we may use simple ice water, or a solution of any of the astringent salts or acids, such as we would use for a similar purpose elsewhere.

The amount to be injected at one time should not be more than a few ounces. The strength must be governed by circumstances, but as a rule the rectum is very susceptible, and a solution of the metallic salts should be weak.

To effect the system.—For this purpose we may use some of the alkaloids in solution, or a vegetable extract, or almost any fluid preparation, provided it is not too irritating.

The injection should not be more than an ounce, and should be warmed to 100° F. If the article is very irritating it may be made less so by mixing it with boiled starch. The dose of most medicines given by the rectum is larger than when given by the stomach.

To excite the peristaltic motion.—This is the object for which injections are most frequently used. We use some irritating substances, together with a considerable bulk of water, or even water alone. In this case the injection is cold or only tepid. The

substances most used are soap and salt, molasses, turpentine, castor oil, or something of a like nature. The amount of the whole injection for an adult varies from a pint to a quart, or more. For a baby under six months, use one ounce ; at a year, two ounces, and increase about one-half an ounce for each year.

To remove parasites.—First, cleanse out the lower bowel with an enema of the last class, and then inject the parasiticide : e. g., Ex. Quassiæ Fl., diluted with warm water to the amount of one to two ounces, and direct it to be retained as long as possible.

Examples :

1.—℞. Bismuthi Subcarbonatis, unciam.
Extracti Opii, grana duo.
Glycerinæ.
Aquæ, ana uncias duas.
M. Fiat Enema.*

Sig. Two tablespoonfuls to be injected three times a week.

2.—℞. Quininæ Hydrobromatis, grana decem.
Alcoholis, minima octo.
Mucilaginis Amyli, drachmas duas.
Aquæ, q. s. ad semiunciam.
M. Et Fiat Enema.

Sig. The whole to be injected at once.

3.—℞. Olei Terebinthinæ, unciæ semissem.
Olei Ricini, unciam cum semisse.
Ovum, unum.
Decocti Hordei, *vel* Aquæ Fervidæ, uncias quatuordecim.
M Fiat Enema.

* Used in stricture of the rectum. See Am. Jl. Med. Sc., Jan., 1873, p. 34.

Sig The whole to be slowly injected into the bowel.

4.—℞. Extracti Quassiæ Fluidi, unciam.
Aquæ, uncias duas.
Misce.

Sig. One tablespoonful with a tablespoonful of hot water, to be injected while warm.

Suppositories.

Besides those which are officinal, we may order suppositories to be made according to an extemporaneous formula. The basis is almost always cacao-butter. The active ingredients are usually extracts or alkaloids; a few metallic salts and other crystalline bodies and some powders being occasionally used. They are usually made for introduction into the rectum. They may also be used in the vagina (called pessaries), uterus, urethra, and eustachian tube. Those intended for the last three canals named are called *bougies*. Suppositories for the adult rectum should contain from 15–30 grs. of cacao-butter; and for children less in proportion. For the vagina a drachm of cacao-butter may be used. An excipient* for vaginal suppositories has been proposed, consisting of gelatine and glycerine, as being more soluble than cacao-butter. For the uterus and urethra cacao-butter is used, and instead of the conical form they are made cylindrical, about 2 inches long and the size of a No. 9 catheter, and weigh 12–15 grains.

* Dr. Meadow's address, Brit. Med. Assoc., 1871.

℞. Extracti Opii, grana quinque.
Plumbi Acetatis, grana duodecim.
Olei Theobromæ, quantum sufficiat.
M. Fiant Suppositoria decem.
Sig One to be introduced into the bowel every three hours.

℞. Extracti Hydrastis, grana decem.
Zinci Sulphatis, grana dua cum semisse.
Olei Theobromæ, drachmæ semissem.
M. Divide in Bougias decem.
Sig. One to be introduced night and morning.

Lotions, Washes and Fomentations.

Lotions or washes are solutions, or mixtures of medicinal agents, for external application. They do not differ, in the mode of prescribing them, from injections. The name *collutorium* is sometimes applied to washes for the mouth. *Fotus* is a fomentation or hot application. *Collyria* are washes or lotions for the eye. They are simple solutions of agents having astringent or emollient action. The term collyrium formerly had a very different meaning. An attempt has been made of late to revive the old usage and to apply the term to all solutions for local application.

Lead and Opium Wash.

℞.—Plumbi Acetatis.
Tincturæ Opii, ana unciam.
Aquam, ad Octarium.
M. Fiat Lotio.
Sig. For external use only. Keep the parts wet with the lotion.

℞.—Zinci Sulphatis, grana tria.
Aluminis, grana sex.
Aquæ Rosæ, uncias duas.
M. Fac Collyrium.
Sig. Drop three drops into the eye twice daily.

Baths (*Balnea*).

Medicated baths are sometimes very valuable agents in the treatment of disease. Of course only the active agents are ordered of the apothecary. They are used in general diseases and also in diseases of the skin. The following is an example:

℞. Acidi Nitrici, uncias undecim.
Acidi Hydrochlorici, uncias viginti.
Misce et signa. To be added to 30 gallons of hot water, in a wooden tub, and used as a bath.

Poultices.

Poultices or cataplasms are seldom or never ordered from the apothecary. The ingredients are mixed by the attendants, and the poultice applied while hot. See Bartholow, p. 515.

Plasters.

Medicinal compounds of a sticky nature which are spread on cloth, leather or sometimes paper, for application to the skin. As they are difficult of preparation, extemporaneous formulæ for their manufacture are not often used. The officinal plasters are employed, or a cerate is ordered to be spread

like a plaster. There is no "*emplastrum vesicatorium*" or "*emplastrum cantharidis*" officinal in the U. S. Ph., so that in ordering a blister, direct one of the cerates of cantharides to be spread on adhesive plaster. Plasters are ordered by the square inch, or according to model "*ad examplar*," thus:

℞. Emplastrum Belladonnæ, 2″ × 3″.
Sig. Apply over the painful spot.

℞. Cerati Extracti Cantharidis, q. s.
Extende Supra Emplastrum Resinæ, 3″ × 3″
Vel. Fiat Emplastrum, 3″ × 3″.
Sig. The blister; leave it on for seven hours.

Ointments and Cerates.

Extemporaneous formulæ for these preparations are very frequent. The basis is either the officinal *ceratum* or *unguentum*, or, in the case of ointments, vaseline, the glycerite of starch (B. Ph.), lard, etc., may be used. As an example the following Compound Belladonna Ointment of the N. Y. Dispensary will answer:

℞. Extracti Belladonnæ.
Plumbi Acetatis, ana unciam.
Acidi Tannici, uncias duas.
Adipis, uncias octo.
M. Fiat Unguentum.
Sig. For external use.

Paints (*Pigmenta*).

Under this name certain preparations for external use have been made which do not seem to come under any other heading. They are such as the following:

℞. Saponis Viridis,
Olei Cadini,
Alcoholis, ana unciam.
M. Fiat Pigmentum.
Sig. For external use (in skin diseases).

℞. Olei Tiglii, drachmam.
Ætheris Fortioris, drachmas duas.
Tincturæ Iodinii, drachmas quinque
Misce.
Sig. Paint on every third night. "Poison."

LINIMENTS.

Fluid preparations for external application, having soap or some fatty substance as a basis. They are applied by friction. They may be simple mixtures of fluids without any fat or soap.

℞. Extracti Belladonnæ Fluidi, semiunciam.
Tincturæ Aconiti Radicis.
Chloroformi Venalis, ana drachmas duas.
Spiritus Camphoræ, unciam.
Alcoholis Diluti, ad unciam octo.
M. Fiat Linimentum.
Sig. "Poison." To be rubbed on the painful parts.

There are other names which are applied to certain preparations besides those given.

A *Linctus* or *Eclectos* is a medicine of a thick syrupy consistency, chiefly used to allay cough, and consisting of pectoral remedies. They were originally eaten from a stick. *Sparadrapum* is another name for plaster. *Taffetas* are very thin plasters spread on silk or paper.

General Remarks.—We have now considered the various forms which prescriptions may take, and the rules for writing them correctly. The collection and repetition of a few of the recommendations which have been made here and there may not be amiss.

Abbreviations.—Never use any abbreviations which can in any way be taken for any thing but the thing meant.

Chirography.—The handwriting of physicians is proverbially bad. The fact that mistakes do not more often happen, derived from this source, is due largely to the great care exercised by the apothecaries. No man should put himself or his patients at their mercy in this respect.

Quantity.—Many practitioners make the great mistake of ordering too much or too little. I do not refer to "shot-gun prescriptions," but to the practice of ordering four ounces when one would do; or again, of ordering two ounces when the patient is expected to use the medicine continually for a month or more. The exercise of a little more judgment in this respect would often be of great advantage to the pockets of patients, and neglect of it often calls

forth severe criticism, and sometimes even charges of collusion.

Directions to the Patient should always be written out with minutest care. If given verbally they may be quickly forgotten, or where two prescriptions are given at once the directions may be confounded. If written down for the patient at home and not on the prescription, the druggist has no data by which to judge of the correctness of the doses ordered.

Revision.—Never let a prescription go out of your hands without carefully going over it and making sure that each word is legible, and that the quantities and doses are correct. It is well, if possible, to let a short interval and a little conversation intervene between the original composition and the revision.

Prescription papers.—It is very convenient always to carry pieces of paper of the proper size on which to write prescriptions. Great inconvenience is often experienced from neglect of this precaution. The name, address, and the sign ℞. may be printed on, as the fancy may dictate. Many druggists furnish blanks for prescriptions, each one with their own advertisement. It is certainly in better taste not to become the medium of advertising any particular druggist. We may each have our preference, and for good reasons; but a verbal recommendation to the patient is generally all that is necessary. Prescription blanks bound up like bank checks, with stubs for copies, are very convenient for reference.

CHAPTER VII.

DOSES OF MEDICINES.

THE determination of the doses for the different drugs, proper under all circumstances and conditions, is simply impossible.

Medicine is an art, and its implements are not to be used according to fixed and invariable rules. Thus their action, as far as is known, being kept carefully in mind, and the object aimed at being never lost sight of, the proper amount to be used, under the existing circumstances, will be determined largely by the effect produced and by the exigencies of the case. Griffiths, in writing on this subject, gives a quotation from a writer in the Medico-Chirurgical Review, which is at once so appropriate and so true that I cannot refrain from reproducing it here. "Doses are the most relative things in the world. It must be confessed that a certain maturity of mind and boldness of action are requisite to escape from the slavery of posological entities or essences, and to

allow the apparent exigencies of the case before us to be our sole guide. That constitutional bashfulness which is called 'caution,' which habitually delights in small ways, and which is half afraid of the instrument it uses, should practice other arts than the art of medicine. A wise courage is the physician's watchword."

It must be carefully borne in mind that the action of a medicine varies very much with the dose. Small doses often have nearly opposite effects from that produced by large ones. In the tables which follow an attempt has been made to give the maximum and minimum doses proper under ordinary circumstances. The Pharmacopœia of the United States gives no table of doses. There is, therefore, no authority on which to rely. It will at once be seen that circumstances may and will arise where much larger or smaller doses than those here given, can be employed with safety and with good results.

Many rules have been given for deducting the doses proper for the different ages. All such rules can give, of course, only an approximate result; as the same factors, such as idiosyncracy, special diseases, which change the doses in adults, and many others even, may be active in the case of a child.

GABIUS' METHOD is the oldest, but is a purely arbitrary statement of the fractional part of the unit suited for each age.

YOUNG'S METHOD is more easily remembered. It

is to add 12 to the age and divide the age by the result. This is simple and sufficiently accurate. For 2 years $= \frac{2}{2+12} = \frac{1}{7}$.

Dr. R. O. Cowling has given a very good rule. According to this, the dose for a child is obtained by dividing the number of the following birthday by 24. For example, at 2 years $= \frac{3}{24} = \frac{1}{8}$.

Dr. E. H. Clark, of Boston, proposed a rule which, although quite accurate, is not very practical. According to this rule the proper dose is in proportion to the weight of the individual. Assuming 150 lbs. as the average weight for which the dose is 1; then the proper dose will be in the same proportion to 1 as the patient's weight to 150. So, if we divide the weight by 150 we shall get a fraction representing the proper part of one, for the dose in this case. If the patient weigh 100 lbs., his dose is $\frac{2}{3}$, or $150 \div 100$. For a baby of 10 lbs. $= \frac{1}{15}$, etc. Of these rules Dr. Cowling's seems the easiest and is quite accurate enough.

Table of Doses.

This table contains the doses of all the substances of the U. S. Pharmacopœia, as far as is practicable. Besides the doses, the definition of the drug is given, taken from the Pharmacopœia, and also the proper accentuation, taken from the same source. Such new and non-officinal drugs as seem to be valuable, have been added to the list. The dose is given in both the old and metric systems.

The doses in the latter not being the exact equivalents of the others, but rather the most convenient approximations. In the case of suppositories, ointments, etc., the strength is given, and either the amount of the active agent *in* an ounce, or the proportion which the active agent and the vehicle bear to each other, etc. Unofficinal drugs are marked with *. If the drug is used in a pure state, the proper dose is given, the name being put in the genitive case, and the form in which it is to be used is indicated when necessary. The doses of fluids must be understood to be in fluid measure. The sign "f" for fluid ounce, etc., has been left off for the sake of clearness. The words "Ph. p." after a substance means that it is used only for Pharmaceutical purposes, to make other preparations.

DOSES.

Absinth'ium.—WORMWOOD. *The tops and leaves of Artemesia Absinthium.*

Absinth'ii, *in powder,*	gr. xv—xl,	grm. 1.—2.5.

Aca'cia.—GUM ARABIC. *A gummy exudation from Acacia verek and other species of Acacia.*

Aca'ciæ, *in powder,*	} *used as vehicles.*
Mucilago Acaciæ,	
Syrupus Acaciæ,	

A'cidum Ace'ticum.—ACETIC ACID. *Acetic acid of sp. gr.* 1.048.

A'cidi Ace'tici,	caustic.	
A'cidum Ace'ticum Dilu'tum,	ʒ i—ii,	grm. 4.—8.
A'cidum Ace'ticum Glacia'le,	caustic.	

A'cidum Arsenio'sum.—Arsenious Acid. *See Arsenium.*

A'cidum Benzo'icum.—Benzoic Acid.

A'cidi Benzo'ici, gr. x.—xxx, grm. .65—2.00.

A'cidum Bo'ricum.—Boric Acid. Boracic Acid.

A'cidi Bo'rici, gr. viii—xvi, grm. .50—1.00.

A'cidum Carbol'icum Cru'dum.—*Crude Carbolic Acid;* Used for disinfecting purposes.

A'cidum Carbol'icum.—Carbolic or Phenic Acid. *A product of the distillation of coal tar between the temperatures of* 180° *and* 190° *C.* (356° *and* 374° *F.*)

A'cidi Carbol'ici, ♏ i, grm. .06.

Unguen'tum Acidi Carbolici, 10 per cent.

A'cidum Chro'micum.—Chromic Acid. External use, as caustic.

A'cidum Ci'tricum.—Citric Acid.

A'cidi Ci'trici, gr. v—℥ ss, grm. .30—2.

Syrupus Acidi Citrici, ʒ i—iv, 4.—15.

A'cidum Gal'licum.—Gallic Acid. *Obtained from nut gall.*

A'cidi Gal'lici, gr. v—xx, grm. .30—1.30.

Unguentum Acidi Gallici, 10 per cent.

A'cidum Hydrobro'micum Dilu'tum.—Diluted Hydrobromic Acid. A 10 per cent. solution.

A'cidi Hydrobromi'ci Dilu'ti, ♏ xxx—℥ i, grm. 2.—4.

A'cidum Hydrochlor'icum.—Hydrochloric Acid. 31.9 per cent.

A'cidum Hydrochlor'icum Dilu'tum,* ♏ viii—xv, grm. .50—1.00.

A'cidum Hydrocyan'icum Dilu'tum.—Diluted Hydrocyanic Acid. Prussic Acid. 2 per cent.

A'cidi Hydrocyan'ici Dilu'ti, ♏ i—iii, grm. .06—.18.

Potas'sii Cyan'idum, gr. $\frac{1}{16}$—$\frac{1}{4}$ grm. .004—.015.

* The strong mineral acids should rarely be prescribed. Use only the dilute acids.

A'cidum Lac'ticum.—LACTIC ACID. *Sp. gr.* 1.212.

A'cidi Lac'tici,	♏ xv—3 i,	grm. 1.—4.

A'cidum Ni'tricum.—NITRIC ACID, *of the sp. gr.* 1.420. 69.4 per cent.

A'cidum Nitricum Dilutum,	♏ xv—xlv,	grm. 1.—3.

A'cidum Nitrohydrochlor'icum.—NITRO-HYDROCHLORIC ACID. *Nitric and hydrochloric acids mixed, 4 to 15.*

A'cidum Nitrohydrochlor'icum Dilutum,	♏ x—3 ss,	grm. .60—2.

A'cidum Ole'icum.—OLEIC ACID.

sp. gr. .800—.810.

A'cidi Ole'ici.	Used to form the oleates.	

A'cidum Phosphor'icum.—PHOSPHORIC ACID.

50 per cent. sp. gr. 1.347.

Acidum Phosphoricum Dilutum,	♏ xv—3 i,	grm. 1.—3.75.

A'cidum Salicyl'icum.—SALICYLIC ACID.

A'cidi Salicyl'ici,	gr. viii—3 i,	grm. .50—4.
Lith'ii Salicyl'as,	gr. i—viii,	.06—.50.
So'dii Salicyl'as,	gr. v—3 ss,	.30—2.

A'cidum Sulphu'ricum.—SULPHURIC ACID. *Oil of vitriol. Sulphuric acid of sp. gr.* 1.843.

Acidum Sulphuricum Dilutum,	♏ v—xx,	grm. .40—1.50
Acidum Sulphuricum Aromaticum,	♏ v—x,	.30—.60

A'cidum Sulphuro'sum.—SULPHUROUS ACID.

Sp. gr. 1.022.

A'cidi Sulphuro'si,	♏ x—3 ii,	grm. .60—8.
Magne'sii Sul'phis,	gr. xv—3 i,	1.—4.
So'dii Bisul'phis,	gr. viii—3 ss,	.50—2.
Sodii Hyposul'phis,	gr. v—xx,	.30—1.30.
Sodii Sulphis,	gr. xv—3 i,	1.—4.
Potas'sii Sulphis,	gr. ii—x,	.12—.60.

A'cidum Tan'nicum.—TANNIC ACID. *Tannin.*

A'cidi Tan'nici,	gr. i—xx,	grm. .06—1.30.
Trochis'ci Acidi Tannici,	*Ad libitum.*	
Unguentum Acidi Tannici,	10 per cent.	

A'cidum Tartar'icum.*—TARTARIC ACID.

A'cidi Tartar'ici,	gr. x—ʒii,	grm. .60—2.60.

Aconi'tum.—ACONITE. *The root of Aconitum Napellus.*

Abstrac'tum Aconi'ti,	gr. $\frac{1}{6}$—ii,	grm. .01—.12.
Extrac'tum Aconiti,	gr. $\frac{1}{6}$—$\frac{3}{4}$	.01—.045.
Extractum Aconiti Flu'idum,	♏ $\frac{1}{2}$—ii,	.03—.12.
Tinct'ura Aconiti,	♏ i—iv,	.06—.24.
* Aconi'tia,	*External use.*	

* Tinctura Aconiti Radi'cis (Fleming's). *About twice as strong as the officinal tincture.* Or nearly as 5 to 3.

Ad'eps.—LARD. *Axungia. Prepared fat of Sus Scrofa.*

Ad'eps Benzoina'tus, O'leum A'dipis,	Ph. p.
Unguen'tum,	lard 4, yellow wax 1.
Cera'tum,	lard 7, white wax 3.
Ceratum Res'inæ.	

Æ'ther.—ETHER. Sulphuric Ether.

Æth'eris, for pharmacopœial use only.

Æther For'tior. Sp. gr. .725.	♏ 5—ʒ i,	grm. .25—3.50.
Spir'itus Æ'theris,	ʒ i—iv,	3.50—14.
Spiritus Ætheris Co.	ʒ ss—ii,	1.70—7.
Spt. Ætheris Nitro'si.	*Sweet spirit of nitre.*	
	ʒ ss—iv,	1.70—14.
Æther Aceticus, *Acetic ether.*	ʒ ss—i,	1.70—3.50.

Al'cohol.—SPIRIT. *Rectified spirit of wine. Spirits of sp. gr. of* .820.

Alcoho'lis. No dose assignable.

Alcohol Dilutum. Equal parts alcohol and water. Sp. gr. 0.928.

* For other acids see drugs from which they are derived.

Spiritus Frumenti. Whiskey, 44—50 per cent. alcohol.
Spiritus Vini Gal'lici. Brandy, 39—47 " " "
Spiritus Odora'tus. Cologne water.
Vinum Album. White wine, 10—12 per cent. alcohol.
Vinum Album Fortius, 20—25 " " "
Vinum Aromaticum, ℥ ss—i, grm. 15.—30.
Vinum Rubrum. Red wine, 10—12 per cent. alcohol.

Al'lium.—GARLIC. Bulb of Allium Sativum.

Al'lii, ʒ ss—ʒ ii, grm. 2.—8.
Syru'pus Al'lii, ʒ i—ʒ ii, 5.—10.

Al'oe.—ALOES. Inspissated juice of the leaves of Aloe Socotrina.

Aloe Purifica'ta, gr. ½—x, .03—.60.
Extractum Aloes Aquosum, gr. ½—vi, .03—.36.
Pilulæ Aloes. Aloes and soap āā 2 grs. in each pill.
Pilulæ Aloes et Asafœtidæ. Aloes, asafœtida and soap āā 1⅓ grs. in each pill.
Pilulæ Aloes et Ferri. Aloes and Sulphate of Iron, āā 1 gr. in each pill.
Pilulæ Aloes et Mastiches (*Lady Webster's*). Aloes 2 grs. mastic and rose āā ½ gr. in each pill.
Pilulæ Aloes et Myr'rhæ. Aloes 2 grs., myrrh 1 gr. and aromatic powder ½ gr. in each pill.
Tinctura Aloes, ♏ viii—ʒ iv, grm. .50—13.50.
Tinctura Aloes et Myr'rhæ, ʒ ss—ii, 2.—7.50.
Vinum Aloes, ʒ i—℥ i 4.—30.

Althæ'a.—MARSHMALLOW. *Root of Althæa officinalis.*

Syrupus Althæ'æ. Demulcent.

Alu'men.—ALUM. *Potassa Alum. Sulphate of Aluminium and Potassium.*

Alu'minis, gr. v—xlv, grm. .30—3.
Alumen Exsiccatum. *External use.*

*** Alumin'ium.**—ALUMINIUM. *The metal Aluminium.*

Aluminii Hydras, gr. iii—xxiii, grm. .18—1.50.

Aluminii Sulphas. *External use.*

Ferric Alum. *See Iron.*

Ammoni'acum.—AMMONIAC. *A gum-resinous exudation from Dorema Ammoniacum.*

Ammoni'aci, gr. viii—ʒ i, grm. .50—4.

Emplastrum Ammoni'aci.

Emplastrum Ammoniaci cum Hydrar'gyro.

Mistura Ammoniaci, ℥ ss—℥ i, 15.—30.

* **Ammo'nia.**—*A gas. With the formula* N H_3.

Aqua Ammo'niæ. 10 per cent. of gas.

♏ x—xx, grm. .60—1.20.

Aqua Ammoniæ Fortior. 28 per cent. of gas.

♏ iii—vi, grm. .20—.40.

Linimentum Ammoniæ.

Spiritus Ammoniæ, ♏ x—ʒ i, .60—4.

Spiritus Ammoniæ Aromaticus, ʒ ss—ʒ ii, 2.—8.

Liquor Ammonii Acetatis, ℥ ss—℥ iss, 15.—45.

Ammo'nii Ben'zoas, gr. x—xx, .60—1.20.

Ammonii Bro'midum, gr. vii—xxx, .50—2.

Ammonii Carbo'nas, gr. ii—x, .13—.65.

Ammonii Chlo'ridum, gr. i—ʒ ss, .06—2.

Trochisci Ammonii Chloridi. 1 = gr. ii.

Ammonii Io'didum, gr. ii—x, .12—.65.

Ammonii Ni'tras. For pharmacopœial use only.

Ammonii Phos'phas, gr. x—xx, grm. .65—1.30.

Ammonii Sul'phas, For pharmacopœial use only.

Ammonii Valeria'nas, gr. ii—viii, .12—.50.

Amyg'dala Ama'ra.—BITTER ALMOND. *The seed of Amygdalus Communis. Variety amara.*

Aqua Amyg'dalæ Ama'ræ, ℥ ss, grm. 15.

Oleum Amygdalæ Amaræ, ♏ ½—½, .01—.03.

Amyg'dala Dul'cis.—SWEET ALMOND. *Variety dulcis.*

Mistura Amygdalæ. *As vehicle.*

Syrupus Amygdalæ, ʒ i—℥ i, grm. 5.—40.

Oleum Amygdalæ Expressum, ʒ i—℥ ss, 3.50—14.

Amyl Nitris.—THE NITRITE OF AMYL.

Amyl Nitritis, { gtt. i—x, *inhalation.* / ♏ i—iii, *internal,* grm. 05—15.

Am'ylum.—STARCH. *The fecula of the seed of Triticum Vulgare.*

Pulvis Amyli, / Glyceri'tum Amyli, } *External use.*

Amyl'um Iodatum, ʒ i—iv, grm. 4.—16.

Ani'sum.—ANI'SE. *The fruit of Pimpinella Anisum.*

Anisi, gr. x—xx, grm. .65—1.30.

Aqua Anisi,

Oleum Anisi, ♏ i—v, .05—.25.

Spiritus Anisi, ʒ i—ii, 4.—8.

An'themis.—CHAMOMILE. *The flowers of Anthemis Nobilis.*

Anthem'idis, ʒ ss—ʒ ii, grm. 2.—8.

* Oleum Anthemidis, ♏ v, .25.

* **Antimo'nium.**—ANTIMONY. *The metal Antimony.*

Pulvis Antimonialis, *James' Powder,* gr. iii—x, grm. .20—.65

Antimonii et Potassii Tartras, *Tartar-emetic,* gr. ½—ii, grm. .005—.13.

Vinum Antimonii (ʒ i = grs. ii), ♏ v—ʒ i, grm. .30—4.

Antimonii Ox'idum, gr. ii—iv, .12—.25.

Antimonii Sul'phidum, / Antimonii Sulphidum Purifica'tum, } Ph. p.

Antimo'nium Sulphura'tum, gr. i—xx, .06—1.30.

Pil. Antimonii Compositæ, 1 = gr. ss each of *Calomel and A. Sulphurat.*

Syrupus Scillæ Compositus. *Tartar Emet.,* 1½ *parts in* 1000.

Apocy'num.—CANADIAN HEMP. *The root of Apocynum Cannabinum.*

Apocy'ni, gr. v—xxx, grm. .30—2.

Aq'ua.—WATER. *Natural water in its purest attainable state.*

Aqua Destillata. *Distilled water.*

* **Argen'tum.**—SILVER. *The metal silver.*

Argenti Cya'nidum. *For preparation of Hydrocyanic Acid only.*

Argenti Io'didum, gr. $\frac{1}{3}$—ii, grm. .02—.12.

Argenti Ni'tras, gr. $\frac{1}{6}$—i, .01—.06.

Argenti Nitras Dilu'tus, } *External use.*
Argenti Nitras Fu'sus, }

Argenti Ox'idum, gr. ss—ii, grm. .03—12.

Ar'nicæ Flo'res.—ARNICA FLOWERS. *The flowers of Arnica Montana.*

Tinctura Arnicæ Flo'rum. *External use.*

Ar'nicæ Rad'ix.—ARNICA ROOT. *The rhizome and rootlets of Arnica Montana.*

Ar'nicæ Radi'cis, gr. x—ʒ ss, grm. .60—2.

Extractum Arnicæ Radicis, gr. v—x, .30—.60.

Extractum Arnicæ Radicis Fluidum, ♏ x—ʒ ss, .60—2.

Emplastrum Arnicæ, *One-half Extract.*

Tinctura Arnicæ Radicis, ʒ ii—v, grm. 7.50—18.

***Arsen'ium.**—THE METAL ARSENIUM. *Not used.*

Acidum Arsenio'sum, *Arsenic*, gr. $\frac{1}{30}$—$\frac{1}{10}$, grm. .002—.006.

Arsen'ii Io'didum, gr. $\frac{1}{20}$—$\frac{1}{10}$, .003—.006.

Liquor Acidi Arseniosi, ♏ v—x, .30—.60.

Liquor Arsenii et Hydrar'gyri Io'didi, *Donovan's Sol.* ♏ i—x, .05—.60.

Sodii Arsen'ias, gr. $\frac{1}{20}$—$\frac{1}{3}$, .003—.02.

Liquor Sodii Arsenia'tis, *Pearson's Sol.*, ♏ iii—x, .20—.60.

Liquor Potassii Arseni'tis, *Fowler's Sol.*, ♏ iii—x, .20—.60.

Asafœt'ida.—ASAFETIDA. *A gum-resin obtained from the root of Ferula Narthex and of Ferula Scorodosma.*

Asafœtidæ, gr. v—xv, grm. .30—1.

Mistura Asafœtidæ (milk of A.), ℥ ss—i, 15.—30.

Pilulæ Aloes et Asafœtidæ.

Pilulæ Asafœtidæ, each grs. 3.
Tinctura Asafœtidæ, ʒ ss—i, grm. 2.—4.
Emplastrum Asafœtidæ.

Ascle'pias.—PLEURISY ROOT. *The root of Asclepias Tuberosa.*

Ascle'piadis, gr. xx—ʒ i, grm. 1.30—4.

Aspid'ium.—MALE FERN.—*The rhizome of Aspidium Filix-mas and of Aspidium marginale.*

Aspid'ii, ʒ ss—ʒ jss, grm. 2.—6.
Oleore'sina Aspidii, ♏ xxx—ʒ i, 2.—4.

Auran'tii Ama'ri Cortex.—BITTER ORANGE PEEL. *The rind of the fruit of Citrus vulgaris.*

Extractum Aurantii Amari Fluidum, ʒ ss—ʒ i, grm. 2.—4.
Tinctura Aurantii Amari, ʒ i—ii, 4.—8.

Auran'tii Dulcis Cortex.—SWEET ORANGE PEEL. *The rind of the fruit of Citrus Aurantium.*

Syrupus Aurantii. *Used as vehicle.*
Tinctura Aurantii Dulcis, ʒ i—ii, grm. 4.—8.
Oleum Aurantii Corticis. *For flavoring.*
Elix'ir Aurantii. *simple elixir,* } *as vehicles.*
Spiritus Aurantii, }

Auran'tii Flo'res.—ORANGE FLOWERS.—*Flowers of both kinds of orange.*

Aqua Aurantii Flo'rum, }
Syrupus Aurantii Florum, } *used as vehicles.*
Oleum Aurantii Florum. *For flavoring.*

* **Aurum.**—GOLD. *The metal Gold. Not used.*

Auri et Sodii Chloridum, gr. $\frac{1}{30}$—$\frac{1}{10}$, grm. .002—.006.

Azed'arach.—BEAD-TREE. *The bark of the root of Melia Azedarach.*

* Decoctum Azedarach, ℥ ss—i, grm. 15.—30.

Bal'samum Peruvianum.—BALSAM OF PERU. *A balsam obtained from Myroxylon Pereiræ.*

Bal'sami Peruvia'ni, ʒ ss, grm. 2. *Mostly external use.*

Bal'samum Toluta'num.—BALSAM OF TOLU. *A balsam obtained from Myroxylon Toluifera.*

Bal'sami Toluta'ni,	ʒ ss,	grm. 2.
Syrupus Toluta'nus, *as vehicle*,	℥ ss—i,	20.—40.
Tinctura Tolutana, *as vehicle*,	ʒ i—ii,	4.—8.

Belladon'næ Fo'lia.—BELLADONNA LEAVES. *Deadly Nightshade. Leaves of Atropa Belladonna.*

Tinctura Belladon'næ,	♏ v—xxx,	grm. .30—2.
Extractum Belladonnæ Alcoholicum,	gr. $\frac{1}{8}$—$\frac{1}{2}$,	.008—.03.
Unguentum Belladonnæ.		

Belladon'næ Radix.—BELLADONNA ROOT. *Root of Atropa Belladonna.*

Abstrac'tum Belladonnæ,	gr. $\frac{1}{2}$—i,	grm. .03—.06.
Extractum Belladonnæ Fluidum,	♏ i—ii,	.06—.12.
Emplastrum Belladonnæ.		
Linimentum Belladonnæ.		
Atro'pina, an alkaloid prepared from Belladonna.		
Atro'pinæ Sulphas,	gr. $\frac{1}{200}$—$\frac{1}{150}$,	.0003—.0012.

Benzin'um.—BENZIN. *A purified distillate from American Petroleum.*

Benzin'i,	♏ ii—vi,	grm. .12—36.

Benzoi'num.—BENZOIN. *A balsamic resin obtained from Styrax Benzoin.*

Benzoi'ni.	*External use.*	
Acidum Benzoi'cum,	gr. x—xxx,	grm. .60—2.
Ammonii Benzo'as,	gr. x—xx,	.60—1.30.
Lith'ii Benzoas,	gr. viii—xxx,	.50—2.
Sodii Benzoas,	gr. x—xxiii,	.65—1.50.
Tinctura Benzoi'ni,	ʒ ss—ʒ i,	2.—4.
Tinctura Benzoini Composita,	ʒ ss—ʒ i,	2.—4.
Adeps Benzoinatus,	2 per cent.	

* **Bismu'thum.**—BISMUTH. *Commercial Bismuth of good quality. Not used.*

Bismu'thi Citras (soluble),	gr. i—iii,	grm. .06—.20.

Bismuthi et Ammonii Citras,	gr. ii—iv,	grm. .12—.25.
Bismuthi Subcarbo'nas,	gr. x—℥ i,	.60—4.
Bismuthi Subni'tras,	gr. x—℥ i,	.60—4.

Braye'ra.—Koosso. *The female inflorescence of Brayera anthelmintica.*

Brayeræ, *in powder,*	℥ ss,	grm. 15.
Extractum Brayeræ Fluidum,	ʒ i—iiss,	4.—10.
Infusum Brayeræ,	℥ ii—iv,	60.—120.

Bro'mum.—Bromine. *A liquid non-metallic element obtained from sea-water.*

Bro'mi.	*External use.*	
Ammo'nii Bro'midum,	gr. v—xxx,	grm. .30—2.
Cal'cii Bromidum,	gr. xv—xxx,	1.—2.
Lith'ii Bromidum,	gr. x—xx,	.65—1.30.
Potas'sii Bromidum, / So'dii Bromidum,	gr. v—℥ i,	.30—4.
Zin'ci Bromidum,	gr. ii—vi,	.12—.40.
Cam'phora Monobroma'ta,	gr. iii—v,	.20—.30.

Bryo'nia.—Bryonia. *The root of Bryonia alba, and of Bryonia dioica.*

Bryo'niæ,	gr. xx—℥ i,	grm. 1.30—4.
Tinctura Bryoniæ,	ʒ ii—x,	7.—34.

Bu'chu.—Buchu. *The leaves of Barosma crenulata and other species of Barosma.*

Bu'chu,	gr. xv—xxx,	grm. 1.—2.
Extractum Buchu Fluidum,	♏ xx—xlv,	1.20—3.

Caffei'na.—Caffeine. *A principle, generally prepared from the dried leaves of Camellia Thea, from the dried seeds of Coffea Arabica, or from Guarana.*

Caffeinæ,	gr. ii—iv,	grm. .12—.25.
* Caffeinæ Citras,	gr. i—iii,	.06—.20.

Cal'amus.—Sweet Flag. *The rhizome of Acorus Calamus.*

Cal'ami,	*ad libitum.*	
Extractum Calami Fluidum.	♏ xv—℥ i,	grm. 1.—4.

***Cal'cium.**—CALCIUM. *The metal Calcium.*

Cal'cii Bromidum, gr. xv—xxx, grm. 1.—2.
Calcii Chloridum, gr. x—xx, .60—1.30.
Calcii Phos'phas Præcipita'tus, gr. x—xxx, .60—2.
Calcii Hypophosphis, gr. iii—v, .20—.30.

Carb. Lime.
- Calcii Carbo'nas Præcipitatus, gr. v—℥ i, .30—4.
- Creta Præparata, gr. x—℥ i, .60—4.
- Pulvis Cretæ Compositus, gr. viii—℥ i, .50—4.
- Trochisci Cretæ, i = gr. iv.
- Mistura Cretæ, ℥ ss, 15.

Calx, *quick lime.* *Escharotic* and Ph. p.
Liquor Calcis, ʒ ii—℥ ii, 8.—60.
Linimentum Calcis, *Carron oil.* *Liq. Calcis and Oleum Gossyp. Sem.*, equal parts.
Calx Chlora'ta (*in sol.*), gr. iii—vi, .20—.40.
Calx Sulphura'ta, gr. $\frac{1}{10}$—$\frac{1}{2}$, .006—.03.
Syrupus Cal'cii Lactophospha'tis, ʒ i—℥ i, 4.—30.
Syrupus Calcis, ♏ xv—ʒ i, 1.—4.
Syrupus Hypophosphi'tum, ʒ ii—℥ i, 8.—30.
Syrupus Hypophosphitum cum Fer'ro, ʒ ii—℥ i, 8.—30.

Calen'dula.—CALENDULA. *Marigold.* *The fresh flowering herb of Calendula officinalis.*

Calendulæ, *ad libitum.*
Tinctura Calendulæ, ʒ i—iv, grm. 4.—15.

Calum'ba.—COLUMBO. *The root of Jateorrhiza Calumba.*

Extractum Calumbæ Fluidum, ♏ v—xxx, grm. .30—2.
Tinctura Calumbæ, ʒ i—vi, 4.—24.

Cambo'gia.—GAMBOGE. *A gum-resin derived from Garcinia Hanburii.*

Cambogiæ, gr. i—v, grm. .06—.30.

Cam'phora.—CAMPHOR. *A stearopten derived from Cinnamomum Camphora and purified by sublimation.*

Cam'phoræ, gr. iii—xx, grm. .20—1.30.
Camphora Monobroma'ta, gr. iii—v, .20—.30.

Aqua Camphoræ, ℥ ss—ii, grm. 15.—60.
Cera'tum Camphoræ.
Spiritus Camphoræ, ʒ ss—i, 2.— 4.
Linimentum Camphoræ, *Cotton seed oil* 4, C. 1.

Can'nabis America'na.—AMERICAN CANNABIS. *Cannabis sativa, grown in the U. S. and collected while flowering.*

Can'nabis In'dica.—INDIAN CANNABIS—INDIAN HEMP. *The flowering tops of the female plant of Cannabis sativa, grown in the East Indies.*

Extractum Cannabis Indicæ, gr. ¼—½, grm. .015—.03.
Extractum Cannabis Indicæ
Fluidum, ♏ i—x, .06—.60.
Tinctura Cannabis Indicæ, ♏ xx, 1.30.

Can'tharis.—CANTHARIDES. *The insect Cantharis vesicatoria.*

Tinctura Canthar'idis, ♏ ii—v, grm. .12—.30.
Ceratum Cantharidis,
Ceratum Extracti Cantharidis, } *For blistering.*
Charta Cantharidis, *Blistering paper.*
Linimentum Cantharidis, 15 *parts Cantharides in* 100.
Collodium cum Cantharide, *For blistering.*
Emplastrum Picis cum Cantharide. "*Warming plaster.*"

Cap'sicum.—CAPSICUM. *Cayenne Pepper. The fruit of Capsicum fastigiatum.*

Capsici, gr. i—v, grm. .06—.30.
Extractum Capsici Fluidum, ♏ ii—x, .12—.60.
Emplastrum Capsici.
Oleores'ina Capsici, ♏ ss—i, .03—.06.
Tinctura Capsici, ♏ x— ʒ i. .60—4.

Car'bo Anima'lis.—ANIMAL CHARCOAL. *Charcoal prepared from bone.*

Carbo Animalis Purificatus, *as antidote,* ℥ ss or more.

Carbo Ligni.—WOOD CHARCOAL. *Charcoal prepared from wood.*

Carbonis Ligni, ʒ i—℥ i, grm. 4.—30.

Carbo'nei Bisulphi'dum.—BISULPHIDE OF CARBON.
Carbo'nei Bisulphidi. *External use.*

Cardamo'mum.—CARDAMON. *The fruit of Elettaria Cardamomum.*

Tinctura Cardamomi,	ʒ ss—ii,	grm. 2.—8.
Tinctura Cardamomi Composita,	ʒ i—iv,	4.—16.

Ca'rum.—CARAWAY. *The fruit of Carum Carvi.*

Oleum Cari,	♏ ss—v,	grm. .03—.25.

Caryophyl'lus.—CLOVES. *The unexpanded flowers of Eugenia Caryophyllata.*

Oleum Caryophylli,	♏ i—v,	grm. .05—.25.

Cascaril'la.—CASCARILLA. *The bark of Croton Eluteria.*

Cascarillæ (*in infusion*),	gr. xxx,	grm. 2.

Cassia Fistula.—PURGING CASSIA. *The fruit of Cassia Fistula.*

Cassiæ Fistulæ,	ʒ ss—ii,	grm. 2.—8.
Confectio Sennæ,	ʒ i—ii,	4.—8.

Casta'nea.—CHESTNUT. *The leaves of Castanea vesca.*

Castaneæ (*in infusion*),	gr. x—ʒ i,	grm. .65.—4.
Extractum Castaneæ Fluidum,	ʒ ss—i,	2.—4.

Cat'echu.—CATECHU. *An extract prepared from the wood of Acacia Catechu.*

Catechu,	gr. x—ʒ ss,	grm. .60—2.
Tinctura Catechu Composita,	ʒ ss—ii,	2.—8.
Trochis'ci Catechu,	1 grain in each.	

Caulophyl'lum.—BLUE COHOSH. *The rhizome and rootlets of Caulophyllum thalictroides.*

Caulophyl'li (*in infusion*),	gr. i—v,	grm. .06—.30.

Ce'ra Fla'va.—YELLOW WAX. *A peculiar concrete substance prepared by Apis Mellifica.*
Cera'tum Resi'næ.
Unguen'tum.

Cera Al'ba.—WHITE WAX. *Yellow wax, bleached.*

Ceratum. Wax 3, Lard 7.

Ce'rii Ox'alas.—OXALATE OF CERIUM.

Cerii Oxalatis, gr. i—iii, grm. .06—.20.

Ceta'ceum.—SPERMACETI. *A peculiar, concrete, fatty substance, obtained from Physeter macrocephalus.*

Cera'tum Ceta'cei. C. 1, Wh. Wax $3\frac{1}{2}$, Olive oil $5\frac{1}{2}$.

Cetra'ria.—ICELAND MOSS. *Cetraria islandica.*

Decoctum Cetrariæ, ℥ ss—iv, grm. 15.—120.

Chelido'nium.—CELANDINE. *Chelidonium majus.*

Chelido'nii, gr. x—℥ ss, grm. .65—2.

Chenopo'dium.—WORMSEED. *The fruit of Chenopodium anthelminticum.*

Chenopo'dii, gr. x—xl, grm. .65—2.60.

Oleum Chenopodii. Dose for a child, ♏ iii—x, grm. .16—.55.

Chimaphi'la.—PIPSISSEWA. *The leaves of Chimaphila umbellata.*

Extractum Chimaphilæ Fluidum, ♏ x—℥ ss, grm. .60—2.

Chira'ta.—CHIRATA. *Ophelia Chirata.*

Chira'tæ (*in infusion*), ℥ ss—i, 2.—4.

Extractum Chira'tæ Fluidum, ♏ xv—xxx, 1.—2.

Tinctura Chiratæ, ℥ ss—ii, 2.—8.

Chlo'ral.—CHLORAL. *Hydrate of Chloral.*

Chlora'lis, gr. v—℥ i, grm. .30—4.

***Croton-Chloral.**—CROTON CHLORAL. *A chlorated aldehyde of Chrotonic Acid.*

*Croton Chloralis, gr. ii—vi, grm. .12—.40.

***Chlorin'ium.**—CHLORINE. *Chlorine Gas.*

Aqua Chlo'ri, ℥ i—℥ ss, grm. 4.—16.

Liquor Sodæ Chlora'tæ, *Labarraque's solution*, ℥ ss—i, grm. 2.—4.

Calx Chlorata.—*Chloride of Lime. Disinfectant.*

Chloroform'um Vena'le.—COMMERCIAL CHLOROFORM.

Chloroform'um Purifica'tum.—PURIFIED CHLOROFORM.

Mistura Chloroform'i, ℥ ss, grm. 18.

Spiritus Chloroformi (1 in 10), ♏ xx—3 i, grm. 1.20—4.
Linimentum Chloroformi (2 to 3).

Chon'drus.—IRISH MOSS. *Chondrus Crispus and Chondrus mammilosus.*

Chon'dri (*in decoction*), ʒ ii—iv, grm. 8.—16.

Chrysarobi'num.—CHRYSAROBIN. *An extract from Goa-powder, a substance found deposited in the wood of the trunk of Andira Araroba. Misnamed Chrysophanic Acid.*

Unguentum Chrysarobi'ni, 10 *per cent.*

Cimicif'uga.—BLACK SNAKEROOT. *The root of Cimicifuga racemosa.*

Extractum Cimicifugæ Fluidum, ʒ ss—i, grm. 2.—4.
Tinctura Cimicifugæ, ʒ ss—ii, 2.—8.

Cincho'na.—CINCHONA. *The bark of any species of Cinchona, containing at least 3 per cent. of the cinchona alkaloids.*

Chinoidi'num,—QUINOIDIN.

Cinchoni'na, Cinchoni'næ Sul'phas, gr. i—ʒ ss, grm. .06—2.

Quini'na, Quininæ Hydrobro'mas, Quininæ Hydrochlo'ras, Quininæ Sulphas, gr. i—xl, .06—2.60.

Quininæ Bisul'phas, gr. i—ʒ ss. .06—2.
Quininæ Valeria'nas, gr. i—ii, .06—.12.
Infu'sum Cincho'næ, ℥ i—ii, 30.—60.

Cincho'na Fla'va.—YELLOW CINCHONA. *Calisaya Bark. The bark of the trunk of Cinchona Calisaya, containing at least 2 per cent. of quinine.*

Cincho'næ Fla'væ, *in powder*, gr. v—xx, grm. .30—1.30.
Extractum Cinchonæ, gr. ii—xv, .12—1.
Extractum Cinchonæ Fluidum, ʒ i, 4.
Tinctura Cinchonæ, ʒ ss—ii, 2.—8.

Cincho'na Ru'bra.—RED BARK. *The bark of the trunk of*

Cinchona succirubra, containing at least 2 per cent. of quinine.

Cinchonidi'næ Sulphas, gr. i—xl, grm. .06—2.60.

Tinctu'ra Cincho'næ Composita, *Huxam's Tincture*, ʒ i—iv, 4.—16.

Cinnamo'mum.—CINNAMON. *The prepared bark of Cinnamomum zeylanicum and other species of cinnamomum.*

Oleum Cinnamo'mi, ♏ i—ii, grm. .05—.10.

Aqua Cinnamomi, *as vehicle.*

Spiritus Cinnamomi, ♏x—ʒ ss, .60—2.

Tinctura Cinnamomi, ʒ i—ii, 4.—8.

Pul'vis Aromaticus, gr. x—ʒ ss, .60—2.

Extractum Aromat'icum Fluidum, ♏xv.—ʒ i, 1.—4.

Coc'cus.—COCHINEAL. *The dried female of Coccus cacti.*

Cocci (for infant), gr. ⅓—i, grm. .02—.06.

Col'chici Ra'dix.—COLCHICUM ROOT. *The corm of Colchicum autumnale.*

Extractum Col'chici Radi'cis, gr. ss—ii, grm. .03—.13.

Extractum Colchici Radi'cis Fl., ♏ii—iv, .10—.25.

Vinum Colchici Radicis, ♏v—xv, .30—1.

Col'chici Se'men.—COLCHICUM SEED. *The seed of Colchicum autumnale.*

Extractum Colchici Seminis Fl., ♏ii—vi, grm. .13—.30.

Tinctura Colchici, ʒ ss—i, 2.—4.

Vinum Colchici Seminis, ʒ ss—i, 2.—4.

Collo'dium.—COLLODION.

Collodii,
Collodium cum Cantharide,
Collodium Flexile,
Collodium Styp'ticum,
} *for external use.*

Colocyn'this.—COLOCYNTH. *The fruit, deprived of its rind, of Citrullus Colocynthis.*

Extractum Colocyn'thidis, (Ph. p.), gr. ½—iii, grm. .03—.20.

Extractum Colocynthidis Comp. (*Colocy., Ex. Aloes and Resin of Scammony*), gr. ii—xv, grm. .13—1.

Pilulæ Catharticæ Compositæ, 1–3 pills.

Coni'um.—HEMLOCK. *The full-grown fruit of Conium Maculatum gathered while yet green.*

Abstrac'tum Conii,	gr. v—x,	grm. .30—.65.
Extractum Conii Fluidum,	♏x—ʒ ss.	.60—2.
Extractum Conii Alcoholicum,	gr. ii,	.12.
Tinctura Conii,	ʒ i,	4.

Copai'ba.—BALSAM OF COPAIBA. *The oleo-resin of Copaifera Langsdorffii and of other species of Copaifera.*

Oleum Copaibæ,	♏v—xx,	grm. .30—1.
Mas'sa Copaibæ,	gr. v—xl,	.30—2.50.
Resina Copaibæ,	gr. v—xx,	.30—1.30.

Corian'drum.—CORIANDER. *The fruit of Coriandrum sativum.*

Corian'dri, *in powder*,	gr. x—ℨ i,	grm. .64—30.
Oleum Coriandri,	♏ i—v,	.06—.30.

Cor'nus.—DOGWOOD. *The bark of the root of Cornus florida.*

Cor'ni, *in decoction*,	gr. xx—ʒ i,	grm. 1.30—4.
Extractum Cornus Fluidum,	ʒ ss—i,	2.—4.

Creaso'tum.—CREASOTE. *A product of the distillation of wood-tar.*

Creaso'ti,	♏ i—ii,	grm. .05—.10.
Aqua Creasoti,	ʒ i—iv,	4.—16.

Cre'ta Praepara'ta.—PREPARED CHALK. *See Calcium.*

Cro'cus.—SAFFRON. *The stigmas of Crocus sativus.*

Croci, } *Used as coloring agents.*
Tinctura Croci, }

Cube'ba.—CUBEB. *The unripe fruit of Cubeba officinalis.*

Cubebæ, *in powder*,	ʒ ss—ʒ i,	grm. 2.—4.
Extractum Cubebæ Fluidum,	ʒ ss—ii,	2.—8.
Oleoresina Cubebæ, } Oleum Cubebæ, }	♏ v—ʒ ss,	.30—2.
Tinctura Cubebæ,	ʒ ss—iv,	2.—16.
Trochisci Cubebæ,	1 = gr. ½ of oleo-resin.	

*** Cu'prum.**—COPPER-WIRE. *The metal Copper.*

Cu'pri Ace'tas.	gr. ¼—i,	grm. .015—.06.
Cupri Sulphas,	gr. ⅙—ss,	.01—.03.
Emetic dose,	gr. ii—x,	.12—.65.

Cydo'nium.—QUINCE SEED. *The seed of Cydonia vulgaris.*

Cydo'nii, *as vehicle.*

Mucila'go Cydonii, *Demulcent.*

Cypripe'dium.—LADIES' SLIPPER. *The rhizome and rootlets of Cypripedium pubescens, and of Cypripedium parviflorum.*

Cypripe'dii,	gr. xv—ʒ ss,	grm. 1.—2.
Extractum Cypripedii Fluidum,	♏ xv—ʒ ss,	1.—2.

Decoc'ta.—DECOCTIONS.

Strength, 10 per cent. of crude drug.

Digita'lis.—FOXGLOVE. *The leaves of Digitalis purpurea from plants of the second year's growth.*

Digita'lis, *in powder,*	gr. ss—ii,	grm. .03—.12.
Abstrac'tum Digitalis,	gr. ¼—i,	.015—.06.
Extractum Digitalis,	gr. ¼—i,	.015—.06.
Extractum Digitalis Fluidum,	♏ ss—ii,	.03—.12.
Tinctura Digitalis (7 ♏ = 1 gr.),	♏ iv—ʒ ss,	.20—1.50.
Infusum Digitalis (66 ♏ = 1 gr.),	ʒ i—ℨ ss,	4.—15.

Dulcama'ra.—BITTERSWEET. *The young branches of Solanum Dulcamara.*

Extractum Dulcamaræ Fluidum, ʒ ss—ii, grm. 2.—8.

Elateri'num.—ELATERIN. *A neutral principle extracted from Elaterium, a substance deposited by the juice of the fruit of Ecballium Elaterium.*

Elateri'ni,	gr. $\frac{1}{20}$ +	grm. .003 +.
Tritura'tio Elaterini,	gr. ½,	.03.

Ergo'ta.—ERGOT. SPURRED RYE. *The sclerotium of Claviceps purpurea replacing the grain of Secale cereale.*

Ergo'tæ, *in powder,*	ʒ ss—i,	grm. 2.—4.
Extractum Ergotæ,	gr. iii—xii,	.18—.72.

Extractum Ergotæ Fluidum, ʒ ss—i, grm. 2.—4.
Vinum Ergotæ, ʒ ii—iv, 8.—16.

Erythrox'ylon.—COCA. *The leaves of Erythroxylon Coca.*

Erythrox'yli, ʒ i—iv, grm. 4.—16.
Extractum Erythroxyli Fluidum, ʒ i—iv, 4.—15.
*Cocain'æ Hydrochloras. *Local anæsthetic.*

Eucalyp'tus.—EUCALYPTUS. *The leaves of Eucalyptus globulus, collected from rather old trees.*

Eucalyp'ti, *not used.*
Extractum Eucalypti Fluidum, ʒ i—ii, grm. 4.—8.
Oleum Eucalypti (*Eucalyptol*), ♏ v—xxx, .30.—2.

Euo'nymus.—WAHOO. *The bark of Euonymus atropurpureus.*

Euo'nymi (*In decoction or infusion*), ℥ i—ii, grm. 30.—60.
Extractum Euonymi, gr. ii—v, .12.—.30.
* Euonymin, gr. ii—v, .12.—.30.

Eupato'rium.—THOROUGHWORT. *Boneset. The leaves and flowering tops of Eupatorium perfoliatum.*

Eupatorii, gr. xv—xxx, grm. 1.—2.
Extractum Eupatorii Fluidum, ♏ xv—ʒ ss, 1.—2.

Fel Bo'vis.—OX GALL. *The fresh gall of Bos Taurus.*

Fel Bovis Inspissatum, } gr. viii—xv, grm. .50—1.
Fel Bovis Purificatum, }

Ferrum.—IRON. *Metallic Iron, in the form of fine, bright, and non-elastic wire.*

Ferrum Reduc'tum, *Quevenne's Iron*, gr. ss—iii, grm. .03—.20.
Massa Ferri Carbona'tis, *Vallet's Mass*, gr. v—xx, grm. .30—1.30.
Ferri Carbo'nas Sacchara'tus, gr. v—xxx, .30—2.
Li'quor Ferri Aceta'tis, Ph. p.
Tinctura Ferri Acetatis, ♏ xv—ʒ i, 1.—4.
Syru'pus Ferri Bromidi, ♏ vi—xxxv, .50—3.
Ferri Chlo'ridum, } *External Use.*
Liquor Ferri Chloridi, }

Tinctura Ferri Chloridi, *Muriated Tincture*,	♏ v—℥ i,	grm. .30—4.
Ferri Ci'tras,	gr. ii—v,	.12—.30.
Liquor Ferri Citra'tis,	♏ x—xv,	.60—.90.
Vinum Ferri Citratis,	℥ i—ii,	4.—8.
Mistu'ra Ferri et Ammo'nii Acetatis,	℥ ii—v,	8.—20.
Ferri et Ammonii Citras,	gr. ii—v,	.12—.30.
Ferri et Ammonii Sulphas, *Iron Alum*,	gr. i—v,	.06—.30.
Ferri et Ammonii Tartras,	gr. v—x,	.30—.60.
Ferri et Potassii Tartras,	gr. v—x,	.30—.60.
Ferri et Quini'næ Citras (12 *per cent. Quin.*),	gr. v—x,	.30—.60.
Liquor Ferri et Quininæ Citratis,	♏ v—xv,	.30—.90.
Ferri et Strychni'næ Citras (1 *per cent. Strych.*),	gr. i—v,	.06—.30.
Syr. Ferri, Quin. et Strych. Phospha'tum,	℥ i—ii,	5.—10.
Ferri Io'didum Sacchara'tum,	gr. v—xv,	.30—1.
Pilulæ Ferri Io'didi,	1—2 pills.	
Syru'pus Ferri Iodidi,	♏ x—xxx,	.60—2.
Ferri Hypophos'phis,	gr. v—x,	.30.—.60.
Ferri Lac'tas,	gr. ii—x,	.12—.60.
Ferri Ox'alas,	gr. ii—v,	.12—.30.
Ferri Phos'phas,	gr. ii—v,	.12—.30.
Ferri Pyrophos'phas,	gr. ii—v,	.12—.30.
Ferri Sul'phas,	gr. ss—iii,	.03—.20.
Ferri Sulphas Exsicca'tus,	gr. ss—ii,	.03—.12.
Ferri Sulphas Præcipita'tus,	gr. ss—ii,	.30—.12.
Ferri Valeria'nas,	gr. i—iii,	.06—.20.
Mistura Ferri Compos'ita,	ℨ ss,	15.
Pilulæ Aloes et Ferri,	1 pill.	
Pilulæ Ferri Compositæ,	1—6 pills.	

Trochis'ci Ferri (1 = *gr.* v.), 1—2 troches.
Vinum Ferri Ama'rum, ʒ i—iv, grm. 4.—15.
Emplastrum Ferri,
Liquor Ferri Nitra'tis, ♏ ii—x, .12—.60.
Liquor Ferri Subsulphatis,
Monsel's Sol. ♏ i—vi, .06—.40.
Liquor Ferri Tersulphatis, *used in preparing the two following:*
Ferri Ox'idum Hydra'tum,
Ferri Oxidum Hydratum cum Magnesia, } *as antidote,*
ℨ ss, grm. 16, *frequently repeated.*
*Ferrum Dialysa'tum, ♏ xx—ʒ i, grm. 1.20—4.

Fi'cus.—FIG. *The fleshy receptacle of Ficus Carica, bearing fruit upon its inner surface.*
Confec'tio Sen'næ, ʒ i—ii, grm. 4.—8.

Fi'lix Mas.—MALE FERN. See Aspidium.

Fœnic'ulum.—FENNEL. *The fruit of Fœniculum vulgare.*
Aqua Fœniculi, ʒ i—iv, grm. 4.—15.
Oleum Fœniculi, ♏ ii—x, .10—.50.

Fran'gula.—BUCKTHORN. *The bark of Rhamnus Frangula, collected at least one year before being used.*
Fran'gulæ (*in decoction*), ʒ ii—ℨ i, grm. 8.—32.
Extractum Frangulæ Fluidum, ʒ ss—iss, 2.—6.

Gal'banum.—GALBANUM. *The gum-resin obtained from Ferula galbaniflua, and probably from other allied plants.*
Gal'bani, gr. v—xx, grm. .30—1.25.
Pilulæ Galbani Compositæ, 1 = gr. iss, *with Myrrh and Asafœtida.*
Emplastrum Galbani.

Gal'la.—NUTGALL. *Excrescences upon Quercus lusitanica, caused by the punctures and deposited ova of Cynips Gallæ tinctoriæ.*
Tinctura Gallæ, ʒ i—ii, grm. 4.—8.
Unguentum Gallæ, 10 *per cent.*

Gaulthe'ria.—WINTERGREEN. *The leaves of Gaultheria procumbens.*

Oleum Gaultheriæ, ♏ ii—v, grm. .13—.30.
Spiritus Gaultheriæ, ʒ i—ii, 3.50.—7.

Gelsem'ium.—YELLOW JASMINE. *The root of Gelsemium sempervirens.*

Extractum Gelsem'ii Fluidum, ♏ v—x, grm. .30—.65.
Tinctura Gelsemii, ʒ ss—ii, 2.—8.

Gentia'na.—GENTIAN. *The root of Gentiana lutea.*

Extractum Gentianæ, gr. ii—x, grm. .13—.65.
Extractum Gentianæ Fluidum, ♏ x—xxx, .60—2.
Tinctura Gentianæ Composita, ʒ i—iv, 4.—16.

Gera'nium.—CRANESBILL. *The rhizome of Geranium maculatum.*

Extractum Geranii Fluidum, ʒ ss—i, grm. 2.—4.

Glyceri'num.—GLYCERIN. *A liquid obtained by the decomposition of fats or fixed oils, and containing not less than 95 per cent. of absolute Glycerin.*

Glyceri'ni, ♏ x—ʒ i, grm. .80—5.
Glyceri'tum A'myli, *as vehicle.*
Glyceritum Vitelli, *external use.*

Glycyrrhi'za.—LIQUORICE ROOT. *The root of Glycyrrhiza glabra.*

Glycyrrhizæ (*in powder*), as excipient, for pills.
Glycyrrhizi'num Ammonia'tum, gr. v—x, grm. .30—.60.
Extractum Glycyrrhizæ,
Extractum Glycyrrhizæ Fluidum, } *For flavoring.*
Extractum Glycyrrhizæ Purum,
Mistura Glycyrrhizæ Composita, ℥ ss—i, grm. 15.—30.
Pulvis Glycyrrhizæ Compositus, ʒ ss—ii, 2.—8.
Trochisci Glycyrrhizæ et Opii, 1 = $\frac{1}{20}$ gr. Ext. Opii, and 2 gr. Ext. Glycyr.

Gossyp'ium. COTTON. *The hairs of the seed of Gossypium herbaceum and of other species of Gossypium, freed from impurities and fatty matter.*

Pyroxylin'um. *Gun Cotton.* *Ph. p. for making Collodium.*
Oleum Gossypii Sem'inis, Ph. p.

Gossyp'ii Radi'cis Cor'tex.—COTTON ROOT BARK. *The bark of the root of Gossypium herbaceum, and of other species of Gossypium.*

Extractum Gossypii Radicis Fluidum, ʒ ss—iii, grm. 2.—12.

Grana'tum.—POMEGRANATE. *The bark of the root of Punica Granatum.*

Grana'ti (*in decoction*), gr. xx—xxx, grm. 1.30—2.

Grinde'lia.—GRINDELIA. *The leaves and flowering tops of Grindelia robusta.*

Extractum Grinde'lia Fluidum, ♏ xv—ʒ i, grm. 1.—4.

Guai'aci Lignum.—GUAIACUM WOOD. *The heart wood of Guaiacum officinale and of Guaiacum sanctum.*

Little used; may be given as decoction.

Guai'aci Resi'na.—GUAIAC. *The resin of the wood of Guaiacum officinale.*

Guaiaci Resinæ, gr. x—xxx, grm. .60—2.
Tinctura Guaiaci, } ʒ ss—ii, 2.—8.
Tinctura Guaiaci Ammoniata, }

Guara'na.—GUARANA. *A dried paste prepared from the crushed or ground seeds of Paullina sorbilis.*

Guara'næ, gr. viii—xlv, grm. .50—3.
Extractum Guaranæ Fluidum, ♏ viii—xlv, .50—3.

Gutta-Percha.—GUTTA-PERCHA. *The concrete juice of Isonandra Gutta.*

Liquor Gutta-Perchæ. *External use.*

Hæmatox'ylon.—LOGWOOD. *The heart-wood of H. campechianum.*

Extractum Hæmatoxyli, gr. v—xx, grm. .30—1.30.
*Decoctum Hæmatoxyli, ℥ i—ii, 30.—60.

Hamame'lis.—WITCH HAZEL. *The leaves of Hamamelis virginica, collected in autumn.*

Hamame'lidis,

Extractum Hamame'lidis Fluidum, ♏ xv—ʒ ii, grm. 1.—8.

Hedeo'ma.—AMERICAN PENNYROYAL. *The leaves and tops of Hedeoma pulegioides.*

Oleum Hedeomæ, ♏ ii—v, grm. .10—.30.

Hu'mulus.—HOPS. *The strobiles of Humulus Lupulus.*

Tinctura Humuli, ʒ ii—ℨ i, grm. 8.—30.

Lupuli'num, *powder separated from Hops*, gr. v—ʒ ss, .30—2.

Extractum Lupuli'ni Fluidum, ʒ ss—ii, 2.—8.

Oleoresi'na Lupulini, ♏ v—ʒ ss, .30—2.

Hydrar'gyrum.—MERCURY. *A silver-white metal, liquid at common temperatures, having a sp. gr. of* 13.5.

PREPARATIONS FOR INTERNAL USE, 12.

Hydrargyri,

Hydrargyrum cum Creta, *Gray powder* (*Hydg.* 38 *per cent.*), gr. v—xxv, grm. .30—1.50.

Massa Hydrargyri, *Blue mass* (⅓ *mercury*), gr. i—x, grm. .06—.65.

Hydrargyri Chlo'ridum Mite. *Calomel*, gr. ss—xv, .03—1.

Pilulæ Antimonii Compositæ (*see Antimony*), *Plummer's pills.*

Pilulæ Cathart'icæ Compositæ,* 1—3 pills.

Hydrargyri Io'didum Vir'ide, *Green Iodide*, gr. ⅙—1, grm. .012—.06.

Hydrargyri Chlo'ridum Corrosi'vum, *Corrosive Sublimate*, gr. $\frac{1}{30}$—$\frac{1}{10}$ grm. .002—.006.

Hydrargyri Iodidum Ru'brum, *Red Iodide*, gr. $\frac{1}{30}$—$\frac{1}{10}$ grm. .002—.006.

Hydrargyri Cyan'idum, gr. $\frac{1}{20}$—$\frac{1}{8}$. .003—.008.

Hydrargyri Subsulphas Flavus, *Turpeth mineral.*

As emetic, gr. ii—iv, grm. .10—.25.

Hydrargyri Sul'phidum Rubrum. *Cinnabar. As fumigation.*

* Contains Calomel, Abst. Jalap āā gr. i, Ex. Colocy. Co. gr. 1½, Gamboge, gr. ½.

PREPARATIONS FOR EXTERNAL USE ONLY, 12.

Emplastrum Ammoni'aci cum Hydrar'gyro.
Emplastrum Hydrargyri.
Unguentum Hydrargyri, 45 *per cent. mercury.*
Hydrarg'yrum Ammonia'tum.
Unguentum Hydrargyri Ammoniati, 10 *per cent.*
Hydrargyri Ox'idum Rubrum.
Unguentum Hydrargyri Oxidi Rubri, 10 *per cent.*
Hydrargyri Oxidum Flavum.
Oleatum Hydrargyri, 10 *per cent. of yellow Oxide.*
Unguentum Hydrargyri Oxidi Flavi, 10 *per cent.*
Liquor Hydrargyri Nitra'tis. (Red Ox. 8, Nit. acid 9, Aq. 3). (*caustic*).
Unguentum Hydrargyri Nitratis. *Citrine ointment.*

Hydras'tis.—GOLDEN SEAL. *The root of Hydrastis Canadensis.*

Extractum Hydrastis Fluidum,	ʒ ss—ii,	grm.	2.—8.
Tinctura Hydrastis,	ʒ ii—v,		8.—20.

Hyoscy'amus.—HENBANE. *The leaves of Hyoscyamus niger, collected from plants of the second year's growth.*

Hyoscy'ami,	gr. v—x,	grm.	.30—.65.
Abstractum Hyoscyami,	gr. iii—v,		.18—.30.
Extractum Hyoscyami Alcoholicum,	gr. i—iii,		.06—.18.
Extractum Hyoscyami Fluidum,	♏ v—ʒ ss,		.30—2.
Tinctura Hyoscyami,	ʒ ss—ii,		2.—8.
Hyoscyami'næ Sulphas,	gr. $\frac{1}{60}$—i,		.001—.06.

Ichthyocol'la.—ISINGLASS. *The swimming-bladder of Acipenser Huso and of other species of Acipenser.*
Ichthyocollæ, *ad libitum, as food.*
Emplastrum Ichthyocollæ.

Igna'tia.—IGNATIA. *The seed of Strychnos Ignatii.*

Abstractum Ignatiæ,	gr. i,	grm.	.06.

Tinctura Ignatiæ, ℥ xv—℥ i, grm. 1.—4.

Illi'cium.—Star Anise. *The fruit of Illicium anisatum.*

Oleum Ani'si, ℥ i—v, grm. .06—.30.

Infu'sa.—Infusions. *Strength,* 10 *per cent. of crude substance.*

In'ula.—Elecampane. *The root of Inula Helenium.*

In'ulæ, (*In decoction*), gr. xv—℥ i, grm. 1.—4.

Iodofor'mum.—Iodoform.

Iodofor'mi, *mostly external use,* gr. i—iii, grm. .06—.18.

Unguentum Iodoformi, 10 *per cent.*

Io'dum.—Iodine. *A bluish-black non-metallic element, obtained principally from the ashes of sea-weeds.*

Io'di, gr. ¼—i. grm. .015—.06.

Liquor Iodi Comp. (*Lugol's Sol.*), ℥ iii—x, .18—.60.

Ammonii Io'didum, gr. ii—x, .12—.60.

Potassii Iodidum, gr. v—℥ i, .30—4.

Syrupus Acidi Hydriod'ici, ℥ i—℥ i, 5.—40.

For External Use Only.

Tinctura Iodi, 8 *per cent.*

Unguentum Iodi (*Iodine,* 4 *per cent., Pot. Iod.,* 1 *per cent.*).

Unguentum Potassii Iodidi, 12 *per cent.*

Ipecacuan'ha.—Ipecac. *The root of Cephaëlis Ipecacuanha.*

Ipecacuanhæ (*in powder*), gr. i—℥ ss, grm. .06—2.

Extractum Ipecacuanhæ Fluidum, ℥ i—℥ ss, .06—2.

Pulvis Ipecacuanhæ et Opii, *Dover's,* gr. v—xv, .30—1.

Tinctura Ipecacuanhæ et Opii, ℥ iii—xv, .18—1.

Syrupus Ipecacuanhæ, } ℥ v—℥ ij, .30—8.
Vinum Ipecacuanhæ, }

Trochisci Ipecacuanhæ, 1 = gr. ¼.

Trochisci Morphinæ et Ipecacuanhæ, 1 = Morphine gr. $\frac{1}{40}$, Ipecac., gr. $\frac{1}{12}$.

I'ris.—BLUE FLAG. *The rhizome and rootlets of Iris versicolor.*

I'ridis,	gr. x—xx,	grm. .65—1.30.
Extractum Iridis,	gr. ii—iv,	.12—.25.
Extractum Iridis Fluidum,	♏ x—xx,	.60—1.30.

Jala'pa.—JALAP. *The tuber of Exogonium Purga.*

Jala'pæ (*in powder*),	gr. v—xx,	grm. .30—1.30.
Abstractum Jalapæ,	gr. iii—x,	.18—.65.
Resina Jalapæ,	gr. ii—iv,	.13—.26.
Pulvis Jalapæ Compositus (*Jalap.* 35, *Pot. Bitart.* 65.),	gr. x—℥ i,	.60—4.

Jug'lans.—BUTTERNUT. *The inner bark of the root of Juglans cinerea, collected in autumn.*

Extractum Juglan'dis,	gr. v—℥ ss,	grm. .30—2.

Junip'erus.—JUNIPER. *The fruit of Juniperus communis.*

Oleum Juniperi,	♏ ii—v,	grm. .10—.25.
Spiritus Juniperi,	℥ ss—i,	2.—4.
Spiritus Juniperi Comp.,	℥ i—iv,	4.—15.

Kama'la.—KAMALA. *The glands and hairs from the capsules of Mallotus Philippinensis.*

Kama'læ,	℥ i—ii,	grm. 4.—8.

Kino.—KINO. *The inspissated juice of Pterocarpus Marsupium.*

Kino (*in powder*),	gr. v—℥ ss,	grm. .30—2.
Tinctura Kino,	℥ i—ii,	4.—8.

Krame'ria.—RHATANY. *The root of Krameria triandra and of K. tomentosa.*

Krameriæ,	gr. x—xx,	grm. .60—1.30.
Extractum Krameriæ,	gr. v—x,	.30—.60.
Trochisci Krameriæ,	1 = 1 gr. of Ext.	
Extractum Krameriæ Fluidum,	♏ v—xx,	.30—1.20.
Syrupus Krameriæ,	℥ i—iv,	5.—20.
Tinctura Krameriæ,	℥ ss—ii,	2.—8.

Lactuca'rium.—LACTUCARIUM. *The concrete milk-juice of Lactuca virosa, Lettuce Opium.*

Lactucarii,	gr. x—℥ i,	grm. .60—4.
Extractum Lactucarii Fluidum,	♏ v—℥ i,	.30—4
Syrupus Lactucarii,	℥ ii—iv,	10.—20.

Lap'pa.—BURDOCK. *The root of Lappa officinalis.*

Lap'pæ (in infusion),	℥ ss—i,	grm. 2.—4.

Lavan'dula.—LAVENDER. *The flowers of Lavandula vera.*

Oleum Lavandulæ,	♏ i—v,	grm. .05—.30.
Oleum Lavandulæ Florum,	♏ i—v,	.06—.30.
Tinctura Lavandulæ Composita,	℥ ss—ii,	2.—8.
Spiritus Lavandulæ,	℥ ss—i,	2.—4.

Leptan'dra.—LEPTANDRA. *The root of Leptandra virginica.*

Leptandræ,	gr. x—℥ i,	grm. .60—4.
Extractum Leptandræ,	gr. ii—iv,	.12—.25.
Extractum Leptandræ Fluidum,	♏ x—℥ i,	.60—4.

Limo'nis Cortex.—LEMON PEEL. *The rind of the recent fruit of Citrus Limonum.*

Oleum Limonis,
Spiritus Limonis, } *For flavoring.*
Syrupus Acidi Citrici, *As a vehicle*

Limo'nis Succus.*—LEMON JUICE. *The freshly expressed juice of the ripe fruit of Citrus Limonum.*

Mist. Potassii Citratis (*neutral mixture*),	℥ ss—ii,	grm. 15.—60.

Syrupus Limonis, *As a vehicle.*

Li'num.—FLAXSEED. *The seed of Linum usitatissimum.*

Oleum Lini, *Flaxseed or Linseed oil.*

***Lith'ium.**—LITHIUM. *A metal.*

Lith'ii Benzoas,	gr. v—xxx	grm. .30—2.
Lithii Bromidum,	gr. x—xx,	.65—1.30.
Lithii Citras,	gr. v—x,	.30—.60.
Lithii Carbo'nas,	gr. ii—x,	.13—.60.
Lithii Salicy'las,	gr. v—xv,	.30—1.

Lobe'lia.—LOBELIA. *Indian Tobacco. The leaves and tops of Lobelia inflata.*

* A solution of Citric Acid ℥ i to Oi, is considered as an equivalent.

Lobe'liæ,	gr. i—xx,	grm. .06—1.30.
Extractum Lobeliæ Fluidum,	♏ v—xv,	.30—1.
Acetum Lobeliæ,	♏ v—ʒ i,	.30—4.
Tinctura Lobeliæ,	♏ ii—ʒ ss,	.12—2.

Lycopo'dium.—LYCOPODIUM. *The sporules of Lycopodium clavatum and other species of Lycopodium.*

Lycopodii,	*External use and Ph. p.*

Ma'cis.—MACE. *The arillus of the fruit of Myristica fragrans.*

Macidis (*in powder*),	gr. x—xv,	grm. .60—1.

* **Magne'sium.**—MAGNESIUM. *A metal.*

Magne'sia, LIGHT MAGNESIA,	gr. v—ʒ ii,	grm. .30—8.
Magnesia Pondero'sa. HEAVY MAGNESIA,	gr. v—ʒ ii,	.30—8.
Trochis'ci Magnesiæ,	1=gr. iii.	
Magnesii Carbo'nas,	gr. x—ℨ i,	.60—31.
Liquor Magnesii Citratis,	ℨ ii—xii,	60.—360.
Magnesii Citras Granulatus,	ʒ ii—ℨ i,	8.—31.
Magnesii Sulphas. *Epsom salts*,	ʒ ii—ℨ i,	8.—31.
Magnesii Sulphis,	gr. xv—ʒ i,	1.—4.
Mistura Magnesiæ et Asafœtidæ,	ʒ ii—iv,	8.—15.

Magno'lia.—MAGNOLIA. *The bark of Magnolia glauca, M. acuminata, and M. tripetala.*

Magno'liæ (*in inf. or decoc.*),	ʒ ss—i,	grm. 2.—4.

Mal'tum.—MALT. *The seed of Hordeum distichum, caused to enter the incipient stage of germination by artificial means, and dried.*

Extractum Malti,	*ad libitum.*

Manga'num.—MANGANESE. *A metal.*

Manga'ni Oxidum Nigrum,	gr. ii—x,	grm. .13—.60.
Mangani Sulphas,	gr. ii—x,	.13—.60.
Potassii Permanganas,	gr. ss—ii,	.03—.13.

Man'na.—MANNA. *The concrete saccharine exudation of Fraxinus Ornus.*

Mannæ, ʒ i—ʒ ii, grm. 4.—60.
Infusum Sennæ Compositum, ʒ iiss, 75.

Marru'bium.—HOREHOUND. *The leaves and tops of Marrubium vulgare.*

Marrubii, ʒ ss—ʒ i, grm 2.—4.

Mas'tiche.—MASTIC. *The concrete resinous exudation from Pistacia Lentiscus.*

Pilulæ Aloës et Mas'tiches. *See Aloes.*

Ma'tico.—MATICO. *The leaves of Artanthe elongata.*

Ma'tico, ʒ ss—ii, grm. 2.—8.
Extractum Matico Fluidum, ʒ ss—ii, 2.—8.
Tinctura Matico, ʒ ss—ii, 15.—60.

Matrica'ria.—GERMAN CHAMOMILE. *The flower-heads of Matricaria Chamomilla.*

Matricariæ (*in inf. or decoc.*). *Ad libitum.*

Mel.—HONEY. *A saccharine secretion deposited in the honeycomb by Apis mellifica.*

Mel Despuma'tum. *As vehicle.*

Melis'sa.—BALM. *The leaves and tops of Melissa officinalis.*

Melis'sæ (*in infusion*), *ad libitum.*

Menisper'mum.—CANADIAN MOONSEED. *The rhizome and rootlets of Menispermum Canadense.*

Menispermi (*in infusion*), gr. v—xx, grm. .30—1.30.

Men'tha Piperi'ta.—PEPPERMINT. *The leaves and tops of Mentha Piperita.*

Aqua Menthæ Piperitæ, *As vehicle.*
Oleum Menthæ Piperitæ, ♏ i—v, grm. .06—.30.
Spiritus Menthæ Piperitæ, ♏ v—ʒ ss, .30—2.
Troschisci Menthæ Piperitæ.

Mentha Vir'idis.—SPEARMINT.—*The leaves and tops of Mentha viridis.*

Aqua Menthæ Viridis, *As vehicle.*

Oleum Menthæ Viridis,	♏i—v,	grm. .06—.30.
Spiritus Menthæ Viridis,	♏v—3 ss,	.30—2.

Meze'reum.—MEZEREUM. *The bark of Daphne Mezereum and of other species of Daphne.*

Extractum Mezerei,	Ph. p.	

Extractum Mezerei Fluidum. *Used in making*

Unguentum Mezerei. (*Fl. Ex.* 2; *Lard* 7; *Wax* 1); *used also in making two compound preparations of Sarsaparilla.*

Mos'chus.—MUSK. *The dried secretion from the preputial follicles of Moschus Moschiferus.*

Moschi,	gr. v—x,	grm. .30.—.60.
Tinctura Moschi,	3 ss—ii,	2.—8.

Myris'tica.—NUTMEG. *The kernel of the seed of Myristica fragrans deprived of its testa.*

Myristicæ (*in powder*),	gr. v—xv,	grm. .30 — 1.
Spiritus Myristicæ,	3 i,	4.
Oleum Myristicæ,	♏i—ii,	.05—.10.

Myrrha.—MYRRH. *A gum-resin obtained from Balsamodendron Myrrha.*

Myrrhæ (*in powder*),	gr. v—3 ss,	grm. .30.—2.
Tinctura Myrrhæ,	3 ss—i,	2.—4. *See Aloes.*

Nux Vom'ica.—NUX VOMICA. *The seeds of Strychnos Nux-vomica.*

Abstractum Nucis Vomicæ,	gr. ss—ii,	grm. .03—.12.
Extractum Nucis Vomicæ,	gr. ¼—½,	.015—.03.
Extractum Nucis Vomicæ Fluidum,	♏i—iv,	.06—.24.
Tinctura Nucis Vomicæ,	♏ii—x,	.12—.60.

Strychnina. *An alkaloid of Nux-Vomica.*

Strychninæ Sulphas,	gr. 1/60—1/20,	grm. .001—.003.

Oleum Æthe'reum.—ETHEREAL OIL. *Used in Spiritus Ætheris Compositus.*

Oleum Berga'mii.—OIL OF BERGAMOT. *A volatile oil, ex-*

tracted by mechanical means from the rind of the fresh fruit of Citrus Bergamia.

Olei Bergamii, *As flavoring.*
Spiritus Odoratus, *Perfume.*

Oleum Cajupu'ti.—Oil of Cajuput. *A volatile oil, distilled from the leaves of Melaleuca Cajuputi.*

Olei Cajupu'ti, ♏ i—v, grm. .06—.30.

Oleum Erigeron'tis.—Oil of Erigeron. *Oil of Fleabane. A volatile oil distilled from the fresh, flowering herb of Erigeron canadense.*

Olei Erigerontis, ♏ v—x, grm. .30—.60.

Oleum Mor'rhuæ.—Cod-Liver Oil. *A fixed oil obtained from the fresh livers of Gadus Morrhua, or of other species of Gadus.*

Olei Mor'rhuæ, ʒ i—ʒ ss, grm. 3.50—15.

Oleum Myr'ciæ.—Oil of Bay. *A volatile oil distilled from the leaves of Myrcia acris.*

Olei Myrciæ, *For flavoring.*
Spiritus Myrciæ, *Bay Rum. As wash or perfume.*

Oleum Oli'væ.—Olive Oil. *A fixed oil expressed from the ripe fruit of Olea europæa.*

Olei Olivæ, ℥ i—iv, grm. 25.—100.

Oleum Ric'ini.—Castor Oil. *A fixed oil expressed from the seed of Ricinus communis.*

Olei Ricini, ʒ ii—℥ i, grm. 7.—25.

Oleum Suc'cini.—Oil of Amber. *A volatile oil obtained by the destructive distillation of Amber, and purified by subsequent rectification.*

Olei Suc'cini, ♏ v—x, grm. .30—.60.

Oleum Ru'tæ.—Oil of Rue. *A volatile oil distilled from Ruta graveolens.*

Olei Rutæ, ♏ i—iii, grm. .06—.18.

Oleum San'tali.—Oil of Sandalwood. *A volatile oil distilled from the wood of Santalum album.*

Olei Santali, ♏ ii—x, grm. .12—.60.

Oleum Ses'ami.—BENNÈ OIL. *A fixed oil expressed from the seed of Sesamum indicum.*

Olei Se'sami, *Dose indefinite.*

Oleum Theobro'mæ.—BUTTER OF CACAO. *A fixed oil expressed from the seed of Theobroma Cacao.*

Used for Suppositories.

Oleum Thy'mi.—OIL OF THYME. *A volatile oil distilled from Thymus vulgaris.*

Olei Thymi, } *External use.*
Thymol, }

Oleum Tig'lii.—CROTON OIL. *A fixed oil expressed from the seed of Croton Tiglium.*

Olei Tiglii, gtt. ¼—iii.

O'pium.—OPIUM. *The concrete milky exudation, obtained in Asia Minor by incising the unripe capsules of Papaver somniferum. Should contain not less than* 9 *per cent. of Morphine.*

Opii, }
Opii Pulvis, } *Dose* gr. ¼—ii, grm. .015—.12.
Opium Denarcotisatum, }

In the preparations of Opium the amount containing, or equivalent to, one grain of Opium is given, and not the dose.

Acetum Opii (*Black drop*), }
Vinum Opii, }
Tinctura Opii (*Laudanum*), } ♏ viiiss, grm. .50.
Tinctura Opii Deodora'ta, }
Tinctura Ipecac. et Opii, }

Tinctura Opii Camphorata (*Paregoric*), ℥ ss, grm. 15.

Extractum Opii, gr. ss, .03.

Pilulæ Opii, Pil. i.

Pulvis Ipecac. et Opii (*Dover's powder*, (*O.* 1, *Ip.* 1, *Sacch. Lactis* 8), gr. x, grm. .65.

Trochisci Glycyrrhizæ et Opii, x = gr. i.
Emplastrum Opii, *Ext. Opii* 1 *in* 17.

Alkaloids of Opium.

Morphi'na, Ph. p.
Morphinæ Ace'tas,
Morphinæ Hydrochloras,
Morphinæ Sulphas, } gr. $\frac{1}{6}$ about, grm. .01.
Pulvis Morphinæ Compositus (*Tully's powder*), (Morph. sulph. 1, Camphor 20, excipient 40), gr. x, .65.
Trochisi Morphinæ et Ipecacuanhæ, 1 = gr. $\frac{1}{40}$.
Codei'na, *Dose* gr. $\frac{1}{4}$—ii, grm. .015—.12.
* Narceina.
* Narcotinæ Murias, *Dose* gr. ii—x, .13—.60.
* Papaverina.
Apomorphinæ Hydrochloras, *Emetic. Dose for Hypodermic injection.* gr. $\frac{1}{10}$—$\frac{1}{16}$.

Orig'anum.—Wild Marjoram. *Origanum vulgare. Component of Vinum aromaticum.*

Parei'ra.—Pareira Brava. *The root of Chondodendron tomentosum.*
Parei'ræ (*in decoction*), ʒ ss—i, grm. 2.—4.
Extractum Pareiræ Fluidum, ʒ ss—i, 2.—4.

Pe'po.—Pumpkin Seed. *The seed of Cucurbita Pepo.*
Peponis, *in emulsion.* ℥ i—℥ ii. grm. 30.—60.

Pepsi'num Saccharatum.—Saccharated Pepsin. *Pepsin, obtained from the mucous membranes of the stomach of the hog, and mixed with Sugar of milk.*
Pepsi'ni Saccharati, *Dose indefinite.*
Liquor Pepsini, ʒ ij—iv, grm. 8.—15.

Petrola'tum.—Petroleum Ointment. *Vaseline. A semi-*

solid substance, consisting of hydrocarbons obtained from American Petroleum.

Petrolati, *External use and Ph. p.*

***Petroseli'num.**—PARSLEY ROOT.

*Apiol, gr. iii—xv, grm. .18—1.

Phos'phorus.—PHOSPHORUS. *A translucent, nearly colorless solid, resembling wax. Very inflammable.*

Phos'phori, gr. $\frac{1}{60}$—$\frac{1}{20}$, grm. .0012—.003.

Acidum Phospho'ricum, (*See*).

Oleum Phospho'ratum, ♏ i—v, .06—.30.

Pilulæ Phosphori, 1 = $\frac{1}{100}$ gr.

Zinci Phosphidum, gr. $\frac{1}{12}$—$\frac{1}{3}$, grm. .005—.02.

Calcii, Sodii, Potassii, Ferri } Hypophosphis, gr. v—xx, grm. .30—1.30.

Syrupus Hypophosphitum, Syrupus Hypophosphitum cum Ferro, } ʒ ii—ʒ i, 10.—40.

Physostig'ma.—CALABAR BEAN. *The seed of Physostigma venenosum.*

Extractum Physostig'matis, gr. $\frac{1}{6}$—i, grm. .01—.06.

Tinctura Physostigmatis, ♏ x—xv, .60—1.

Physostig'minæ Salicylas, $\frac{1}{60}$—$\frac{1}{12}$, .001—.005.

*Eserinæ Sulphas, gr. $\frac{1}{60}$—$\frac{1}{10}$, .001—.006.

Phytolac'cæ Bac'ca.—POKE BERRY. *The fruit of Phytolacca decandra.*

Phytolaccæ Ra'dix.—POKE ROOT. *The root of Phytolacca decandra.*

Phytolaccæ Radi'cis, gr. i—xxx, grm. .06—2.

Picrotoxi'num.—PICROTOXIN. *A neutral principle prepared from the seed of Anamirta paniculata.*

Picrotoxi'ni, gr. $\frac{1}{240}$—$\frac{1}{60}$, grm. .00025—.001.

Pilocar'pus.—JABORANDI. *The leaflets of Pilocarpus pennatifolius.*

Pilocarpi, gr. v—℥ i, grm. .30—4.
Extractum Pilocarpi Fluidum, ♏ v—℥ i, .30—3.75.
Pilocarpinæ Hydrochloras, gr. $\frac{1}{8}$—$\frac{1}{3}$, .008—.02.

Pimen'ta.—ALLSPICE. *The nearly ripe fruit of Eugenia Pimenta.*

Pimentæ (*in powder*), gr. v—℥ ss, grm. .30—2.
Oleum Pimentæ, ♏ i—iv, .05—.20.

Piper.—BLACK PEPPER. *The unripe fruit of Piper nigrum.*

Piperis, gr. i—xx, grm. .06—1.30.
Oleoresina Piperis, ♏ ss—ii, .03—.10.
Piperina, gr. i—x, .06—.65.

Pix Burgun'dica.—BURGUNDY PITCH. *The prepared, resinous exudation of Abies excelsa.*

Emplastrum Picis Burgundicæ.
Emplastrum Picis cum Cantharide, *warming plaster.*
Also in 3 other plasters.

Pix Canaden'sis.—CANADA PITCH.—(*Hemlock Pitch.*) *From Abies canadensis.*

Emplastrum Picis Canadensis.

Pix Liq'uida.—TAR. *An empyreumatic oleoresin obtained by the destructive distillation of the wood of Pinus palustris, and of other species of Pinus.*

Oleum Picis Liquidæ, External use.
Syrupus Picis Liquidæ, ℥ ss, grm. 20.
Unguentum Picis Liquidæ, *One-half Tar.*

***Plum'bum.**—LEAD. *The metal not used.*

Plumbi Ace'tas, (*Sugar of lead*), gr. ss—v, grm. .03—.30.

EXTERNAL USE ONLY.

Liquor Plumbi Subaceta'tis. *Goulard's Extract.*
Liq. Plumbi Subaceta'tis Dilutus,
Ceratum Plumbi Subacetatis, *Goulard's Cerate*, 1 of Liq. to 4.
Linimentum Plumbi Subacetatis, Liq. 2, Cotton-Seed Oil 3.

Plumbi Carbo'nas. *White Lead.*
Unguentum Plumbi Carbona'tis, 10 per cent.
Plumbi Io'didum,
Unguentum Plumbi Io'didi, 10 per cent.
Plumbi Nitras.
Plumbi Ox'idum. *Litharge.* Ph. p.
Emplastrum Plumbi. *Lead Plaster; used also in making eleven other plasters.*
Unguentum Diachylon.

Podophyl'lum.—MAY APPLE. *The rhizome and rootlets of Podophyllum peltatum.*

Podophyl'li,	gr. x—xx,	grm. .65—1.30.
Abstractum Podophylli,	gr v—x.	.30—.65.
Extractum Podophylli,	gr. v— xv,	.30—1.
Extractum Podophylli Fluidum,	♏x—xx,	grm. .65—1.30.
Resina Podophyl'li,	gr. $\frac{1}{12}$—$\frac{1}{3}$,	.005—.02.

***Potas'sium.**—POTASSIUM. *A metal.*

otas'sa. *Caustic Potash.*	*Caustic.*	
Liquor Potassæ (5½%),	♏v—xx,	.30—1.30.
Potassa cum Calce,	*Caustic.*	
Potassii Ace'tas,	gr. x— ʒ i,	.60—4.
Potassii Carbonas,	gr. v— ʒ ss,	.30—2.
Potassii Bicarbo'nas,	gr. x— ʒ i,	.60—4.
Potassii Bichrom'as,	gr. $\frac{1}{6}$—ss,	.01—.03.
Potassii Tartras,	gr. x— ʒ i	.60—4.
Potassi Bitar'tras (*Cream of Tartar*),	gr. v,— ʒ ii,	.30—8.
Potassii et Sodii Tartras (*Rochelle salt*),	ʒ i— ℥ i,	4.—30.
Potassii Chlo'ras,	gr. v— ʒ ss,	.30—2.
Trochisci Potassii Chlora'tis,	1=gr. v.	
Potassii Ci'tras,	gr. v— ʒ ss,	.30—2.
Liquor Potassii Citra'tis,		

(*Cit. Acid* 6, *Pot. Bicarb.* 8 *parts in* 100),
℥ ss, grm. 15.

Mistura Potassii Citra'tis,
(*Lemon juice neutralized with Pot. Bicarb.*),
℥ ss, 15.

Potassii Ferrocyan'idum, Ph. p.

Potassii Nitras, gr. v—xx, .30—1.30.

Charta Potassii Nitratis.

Potassii Sulphas, ʒ i—℥ ss, 4.—15.

Potassa Sulphura'ta, gr. $\frac{1}{10}$—iii, .006—.20.

Pri'nos.—BLACK ALDER. *The bark of Prinos verticillatus.*

Pri'ni, ʒ ss, grm. 2.

Prunum.—PRUNE. *The fruit of Prunus domestica. Enters into Confectio Sennæ.*

Pru'nus Virginia'na.—WILD CHERRY. *The bark of Prunus serotina, collected in autumn.*

Extractum Pruni Virginianæ
Fluidum, ʒ ss—i, grm. 2.—4.

Infusum Pruni Virginianæ, ℥ ii, 60.

Syrupus Pruni Virginianæ, *As vehicle.*

Pulsatil'la.—PULSATILLA. *The herb of Anemone Pulsatilla and of other species, collected soon after flowering.*

Pulsatillæ, gr. i—vi, grm. .06—.40.

Pyre'thrum.—PELLITORY. *The root of Anacyclus Pyrethrum.*

Pyre'thri, ʒ ss—i, grm. 2.—4.

Tinctura Pyrethri, *Locally.*

Quas'sia.—QUASSIA. *The wood of Picræna excelsa.*

Quassiæ, gr. xv—xxx. grm. 1.—2.

Extractum Quassiæ, gr. ss—iii, .03.—.20.

Extractum Quassiæ Fluidum, ʒ ss—1, 2.—4.

Tinctura Quassiæ, ♏ xv—ʒ i, 1.—4.

Quer'cus Alba.—WHITE OAK. *The bark of Quercus alba.*

Quillai'a.—SOAP BARK. *The bark of Quillaia Saponaria.*

Resi'na.—RESIN. *The residue left after distilling off the volatile oil from Turpentine.*

Ceratum Resinæ,	*Basilicon ointment.*
Emplastrum Resinæ,	*Adhesive plaster.*

Rhe'um.—RHUBARB. *The root of Rheum officinale and of other undetermined species of Rheum.*

Rhei (*in powder*),	gr. i—3 i,	grm. .06.—4.
Extractum Rhei,	gr. v—xv,	.30—1.
Extractum Rhei Fluidum,	♏ i—3 i,	.05—4.
Mixtura Rhei et Sodæ,	3 ii—℥ iii,	8.—90.
Pilulæ Rhei,	1 = 3 gr.	
Pilulæ Rhei Compositæ (*R. gr.* ii, *Aloes, gr.* iss),	1–4 pills.	
Pulvis Rhei Compositus (*Ginger* 1, *R.* 2, *Magnesia* 6),	3 ss,	grm. 2.
Syrupus Rhei, / Syrupus Rhei Aromaticus,	*Dose for infant* 3 i,	4.
Tinctura Rhei, / Tinctura Rhei Aromatica,	3 i—iv,	4.—16.
Tinctura Rhei Dulcis,	3 ii—vi,	7.—20.
Vinum Rhei,	3 i—iv,	4.—15.

Rhus Gla'bra.—SUMACH. *The fruit of Rhus Glabra.*

Rhois Glabræ,		
Extractum Rhois Glabræ Fluidum,	3 i—ii,	grm. 4.—8.

Rhus Toxicoden'dron.—POISON IVY. *The fresh leaves of Rhus Toxicodendron.*

Rhois Toxicoden'dri,	gr. v,	grm. .30.

Rosa Centifo'lia.—PALE ROSE. *The petals of Rosa Centifolia.*

Oleum Rosæ,	*For flavoring.*
Aqua Rosæ,	*As vehicle.*
Unguentum Aquæ Rosæ,	*Cold Cream.*

Rosa Gal'lica.—RED ROSE. *The petals of Rosa Gallica, collected before expanding.*

Confectio Rosæ,
Extractum Rosæ Fluidum, } *As vehicles.*
Mel Rosæ,
Syrupus Rosæ, *As vehicle.*

Rosmari'nus.—ROSEMARY. *The leaves of Rosmarinus officinalis.*

Oleum Rosmarini, ♏ i—v, grm. .05—.25.

Ru'bus.—BLACKBERRY. *The bark of the root of Rubus canadensis, Rubus villosus and Rubus trivialis.*

Extractum Rubi Fluidum, ʒ ss—i, grm. 2.—4.
Syrupus Rubi, ʒ i—ii, 4.—8.

Rubus Idæ us.—RASPBERRY. *The fruit of Rubus Idæus.*

Syrupus Rubi Idæi. *As vehicle.*

Ru'mex.—YELLOW DOCK. *The root of Rumex crispus, and of other species of Rumex.*

Ru'micis (*in decoction*), ʒ ss—i, grm. 2.—4.
Extractum Rumicis Fluidum, ʒ ss—i, 2.—4.

Sabi'na.—SAVINE. *The tops of Juniperus Sabina.*

Sabinæ, gr. v—xv, grm. .30—1.
Oleum Sabinæ, ♏ i—v, .05—.30.
Extractum Sabinæ Fluidum, ♏ v—xv, .30—1.
Ceratum Sabinæ, Ex. Fl. 23 *per cent.*

Sac'charum.—SUGAR. *The refined sugar of Saccharum officinarum.*

Syrupus, *Simple Syrup, used as vehicle.*

Sac'charum Lactis.—SUGAR OF MILK. *A peculiar, crystalline sugar, obtained from the whey of cows' milk by evaporation, and purified by re-crystallization. Used as a vehicle.*

Salici'num.—SALICIN. *A neutral principle prepared from the bark of Salix Helix and of other species of Salix.*

Salicini, gr. v—ʒ ss, grm. .30—2.

Sa'lix.—WILLOW. *The bark of Salix alba and of other species of Salix.*

Sa'licis, gr. x—3 i, grm. .65—4.

Sal'via.—SAGE. *The leaves of Salvia officinalis.*

Salviæ (*in infusion*), *Use as gargle.*

Sambu'cus.—ELDER. *The flowers of Sambucus canadensis.*

Sambuci (*in decoction*).

Sanguina'ria.—BLOODROOT. *The rhizome of Sanguinaria canadensis.*

Acetum Sanguinariæ, } ♏ xv—3 ss, grm. 1.—2.
Tinctura Sanguinariæ, }

Extractum Sanguinariæ Fluidum, ♏ i—v, grm. .06—.30.

San'talum Ru'brum.—RED SAUNDERS. *The wood of Pterocarpus santalinus. Used as a coloring agent.*

Santon'ica.—SANTONICA. *The unexpanded flower-heads of Artemisia maritima.*

Santonicæ, gr. x—xx, grm. .65—1.30.
Santoni'num, gr. i—v, .06—.30.
Sodii Santoninas, gr. v—x, .30—.65.
Trochisci Sodii Santoninatis, 1=gr. i.

Sap'o.—SOAP. *Soap prepared from soda and olive oil.*

Emplastrum Saponis.
Linimentum Saponis. *As a vehicle for liniments.*

Sap'o Vir'idis.—GREEN SOAP. *Soap prepared from potassa and fixed oils.*

Tinctura Sapo'nis Viridis, *External use.*

Sarsaparil'la.—SARSAPARILLA. *The root of Smilax officinalis, Smilax medica, and of other undetermined species of Smilax.*

Extractum Sarsaparillæ Fluidum, 3 iss, grm. 2.—4.
Extractum Sarsaparillæ Fluid. Comp, 3 i, 4.
Syrupus Sarsaparillæ Compositus, 3 ii—3 i, 8.—30.

Decoctum Sarsaparillæ Compositum, ℥ ii—iv, 60.—120.

Sas'safras.—SASSAFRAS. *The bark of the root of Sassafras officinalis.*

Oleum Sassafras, ♏ i—v, grm. .05—.25.

Sas'safras Medul'læ.—SASSAFRAS PITH. *The pith of Sassafras officinalis.*

Mucilago Sassafras Medullæ, *As collyrium and drink.*

Scammo'nium.—SCAMMONY. *A resinous exudation from the root of Convolvulus Scammonia.*

Scammo'nii, gr. v—xv, grm. .30—1.

Resina Scammonii, gr. ii—x, .13—.60.

Scilla.—SQUILL. *The sliced bulb of Urginea Scilla.*

Scillæ, gr. ss—iii, grm. .03—.20.

Acetum Scillæ, ♏ xv—℥ i, 1.—4.

Tinctura Scillæ, ♏ x—℥ ss, .60—2.

Syrupus Scillæ, ℥ ss—i, 2.—4.

Syrupus Scillæ Compositus, *Hive Syrup* (*Tart. Emet.* 1½ parts in 1000), ♏ v—℥ ss, grm. .30—2.

Extractum Scillæ Fluidum, ♏ ss—iii, .03—.20.

Scopa'rius.—BROOM. *The tops of Sarothamnus Scoparius.*

*Decoctum Scoparii, ℥ ss—i, grm. 15.—30.

Scutella'ria.—SCULLCAP. *Scutellaria lateriflora.*

Extractum Scutellariæ Fluidum, ℥ i—ii, grm. 4.—7.50.

Sen'ega.—SENEGA. *The root of Polygala Senega.*

Abstractum Senegæ, gr. v—x, grm. .30—.60.

Extractum Senegæ Fluidum, ♏ x—xx, .60—1.30.

Syrupus Senegæ, ℥ i—ii, 5.—10.

Sen'na.—SENNA. *The leaflets of Cassia acutifolia and of Cassia elongata.*

Confectio Sennæ, ℥ i—ii, grm. 4.—8.

Extractum Sennæ Fluidum, ℥ i—iv, 4.—16.

Infusum Sennæ Compositum, ℥ iiss, 75.

Syrupus Sennæ, ʒ i—iv, grm. 5.—20.

Serpenta'ria.—VIRGINIA SNAKEROOT. *The root of Aristolochia Serpentaria and of Aristolochia reticulata.*

Extractum Serpentariæ Fluidum, ♏ x—xxx, grm. .60—2.

Tinctura Serpentariæ, ʒ i—ii, 4.—8.

Se'vum.—SUET. *The internal fat of the abdomen of Ovis Aries purified by melting and straining.*

Sevi, Ph. p. *only.*

Sina'pis Alba.—WHITE MUSTARD. *The seed of Sinapis Alba.*

Sina'pis Nigra.—BLACK MUSTARD—*The seed of Sinapis Nigra.*

Charta Sinapis, 6 grains or grm. .40 to the square inch.

Oleum Sinapis Volatile (*diluted*), } *External use.*
Linimentum Sinapis Compositum, }

***So'dium.**—SODIUM. *The metal.*

Soda. *Caustic Soda,* *Caustic.*

Liquor Sodæ, ♏v—xv, grm. .30—1.

So'dii Carbo'nas (*largely for* Ph. p.), gr. v—x, .30—.60.

So'dii Carbo'nas Exsiccatus, Ph. p.

Sodii Bicarbo'nas, gr. v—ʒ ss, .30—2.

Sodii Bicarbonas Venalis, *Externally.*

Pulv. Efferves. Comp. *Seidlitz powder.* (*White paper,* 35 *grs. Acid Tart., Blue,* 40 *grs. Sodii Bicarb. and* 120 *grs. Rochelle salts*), *Dose* 1—2 *powders.*

Trochis'ci Sodii Bicarbonatis, 1 = gr. iii.

Sodii Ace'tas, gr. x—ʒ i, grm. .60—4.

Sodii Benzoas, gr. v—xx, .30—1.30.

Sodii Bo'ras. *Borax.* gr. v—ʒ ss, .30—2.

Sodii Bromidum, gr. v—ʒ i, .30—4.

Sodii Chloras, gr. v—xxv, .30—1.50.

Sodii Chlo'ridum. *Salt. As Emetic.* ℥ ss—ii, grm. 15.—60.

Sodii Io'didum,	gr. v—xxx,	.30—2.
Sodii Nitras,	Ph. p.	
Sodii Phosphas,	gr. xx—ʒ ii,	1.30—60.
Sodii Pyrophosphas,	Ph. p.	
Sodii Sulphas. *Glauber's salt.*	ʒ ss—i,	15.—30.
Sodii Salicylas,	gr. v—xxx,	.30—2.
Sodii Sulphocarbolas,	gr. v—xxx,	30—2.
Liquor Sodii Silicatis,	*External use.*	

Spige'lia.—PINKROOT. *The root of Spigelia marilandica.*

Spige'liæ,	ʒ ss—ii, grm.	2.—8.
Extractum Spigeliæ Fluidum,	ʒ ss—ii,	2.—8.

Staphisa'gria.—STAVESACRE. *The seed of Delphinium Staphisagria.*

Staphisa'griæ,	*External use.*	
* Delphini'na,	gr. $\frac{1}{12}$—$\frac{1}{6}$, grm.	.005—.01.

Stillin'gia.—YAN, OR QUEEN'S ROOT. *The root of Stillingia sylvatica.*

Stillingiæ,	gr. x—ʒ ss, grm.	.60—2.
Extractum Stillingiæ Fluidum,	♏ x—ʒ ss,	.60—2.

Stramo'nii Folia.—STRAMONIUM LEAVES. *The leaves of Datura Stramonium.*

Stramo'nii Semen.—STRAMONIUM SEEDS. *The seeds of Datura Stramonium.*

Extractum Stramonii,	gr. $\frac{1}{4}$—i, grm.	.016—.06.
Extractum Stramonii Fluidum,	gr. $\frac{1}{6}$—$\frac{1}{2}$,	.01—.03.
Tinctura Stramonii,	♏ v—xx,	.30—1.30.
Unguentum Stramonii,	10 *per cent Extract.*	

Sty'rax.—STORAX. *A balsam prepared from the inner bark of Liquidambar orientalis.*

Styracis,	gr. v—xx. grm.	.30—1.30.
Used in Tr. Benzoini Comp.		

***Sul'phur.**—SULPHUR. *Brimstone.*

Sulphur Sublima'tum. *Flowers of Sulphur.*

Unguentum Sul'phuris. *S. Sub.* 3, *Lard* 7.

Sulphur Lotum. *Washed Sulphur. S. S. washed with water,* 3 i—iii, grm. 4.—12.

Unguentum Sulphuris Alkalinum, (*S. L.* 2, *Pot. carb.* 1, *Lard* 7.)

Sulphur Præcipita'tum. *Milk of Sulphur,* 3 i—iii, grm. 4.—12.

Sulphuris Io'didum.

Suppositoʹria.—SUPPOSITORIES. *Each to weigh about* 15 *grs. grm.* 1.

Sum'bul.—SUMBUL. *The root of Ferula Sumbul.*

Sum'bul (*in powder*), gr. viii—xxiii, grm. .50—1.50.

Tinctura Sumbul, 3 i—iv, 3.50—14.

Syru'pus.—SYRUP. *Sugar* 65 *per cent.*

Taba'cum.—TOBACCO. *The commercial dried leaf of Nicotiana Tabacum.*

Taba'ci, gr. ss—ii, grm. .03—.13.

Tamarind'us.—TAMARIND. *The preserved pulp of the fruit of Tamarindus indica.*

Used for making a drink and for Confection of Senna.

Tanace'tum.—TANSY. *The leaves and tops of Tanacetum vulgare.*

Tanaceti (*in powder*), gr. xv— 3 ii, grm. 1.—8.

Tarax'acum.—DANDELION. *The root, gathered in the autumn, of Taraxacum Dens-leonis.*

Extractum Taraxaci, gr. xx— 3 i, grm. 1.30—4.

Extractum Taraxaci Fluidum, 3 i—ii, 4.—8.

Terebin'thina.—TURPENTINE. *A concrete oleo-resin, obtained from Pinus australis, and from other species of Pinus.*

Oleum Terebin'thinæ. *The volatile oil distilled from Turpentine, called Spirits of Turpentine.*

℥ v—℥ ss, grm. .30—15.

Linimentum Terebinthinæ. *See Resina.*

Terebin'thina Canadensis.—CANADA TURPENTINE. *Balsam of Fir. A liquid oleo-resin obtained from Abies balsamea.*

Terebinthinæ canadensis, gr. xv—3 i, grm. 1.—4.

Thu'ja.—ARBOR VITÆ. *The fresh tops of Thuja occidentalis.*

Thu'jæ (*in infusion*), 3 i, grm. 4.

Tinctu'ræ Herba'rum Recen'tium.—TINCTURES OF FRESH HERBS.

The Fresh Herb 50 *parts*, *Alcohol* 100 *parts.*

Tragacan'tha.—TRAGACANTH. *A gummy exudation from Astragalus gummifer, and from other species of Astragalus.*

Tragacanthæ (*in powder*), } *As vehicles.*
Mucilago Tragacanthæ, }

Tri'ticum.—COUCH GRASS. *The rhizome of Triticum repens.*

Tri'tici (*in inf. or decoc.*), *As Demulcent.*

Extractum Tritici Fluidum, 3 i—℥ i, grm. 4.—30.

Trituratio'nes.—TRITURATIONS.

The Substance 10 *parts*, *Sugar of Milk* 90 *parts.*

Ul'mus.—SLIPPERY ELM. *The inner bark of Ulmus fulva.*

Ul'mi, *ad libitum.*
Mucila'go Ulmi, *as demulcent.*

Ustila'go.—USTILAGO. *Corn Smut. Ustilago Maydis, grown upon Zea Mays.*

Ustilaginis, gr. xv—3 i, grm. 1.—4.

Uva Ursi.—BEARBERRY. *The leaves of Arctostaphylos Uva-Ursi.*

Extractum Uvæ Ursi Fluidum, 3 i—ii, grm. 4.—8.

Valeria'na.—VALERIAN. *The root of Valeriana officinalis.*

Oleum Valeria'næ, ℥ ii—x, grm. .10—.55.

Abstractum Valerianæ,	gr. xv—xxx,	1.—2.
Extractum Valerianæ Fluidum,	ʒ ss—i,	2.—4.
Tinctura Valerianæ,	ʒ i—iii,	4.—12.
Tinctura Valerianæ Ammoniata,	ʒ i—iii,	4.—.12.

Vanil'la.—VANILLA. *The fruit of Vanilla Planifolia.*

Tinctura Vanillæ, *For flavoring.*

Veratri'na.—VERATRINE. *An alkaloid or mixture of alkaloids, prepared from the seeds of Asagræa officinalis.*

Veratrinæ,	gr. $\frac{1}{12}$—$\frac{1}{6}$,	grm. .005—.01.
Oleatum Veratrinæ,	2 per cent.	
Unguentum Veratrinæ,	4 per cent.	

Vera'trum Vir'ide.—AMERICAN HELLEBORE. *The rhizome and rootlets of Veratrum viride.*

Extractum Veratri Viridis Fluidum,	♏ i—v,	grm. .06—.30.
Tinctura Veratri Viridis,	♏ ii—vi,	.13—.40.

Vibur'num.—BLACK HAW. *The bark of Viburnum prunifolium.*

Extractum Viburni Fluidum, ♏ xv—ʒ i, grm. 1.—4.

Vio'la Tri'color.—PANSY. *The wild-grown flowering herb of Viola tricolor.*

Violæ Tricoloris (*in decoction*), gr. xv—ʒ i, grm. 1.—4.

Vitel'lus.—YOLK OF EGG. *The yolk of the egg of Gallus Bankiva.*

Vitelli,	Ph. p.	
Glyceritum Vitelli,	*Glyconin. External use.*	

Xanthox'ylum.—PRICKLY ASH. *The bark of Xanthoxylum fraxineum, and of Xanthoxylum carolinianum.*

Extractum Xanthoxyli Fluidum,	ʒ ss—1,	2.—4.

Zincum.—ZINC. *A bluish-white metal.*

Zinci Oxidum,	gr. i—v,	grm. .06.—.30.
Unguentum Zinci Oxidi,	20 per cent.	

Zinci Ace'tas, *Astringent.*
Zinci Bromidum, gr. i—v, grm. .06.—.30.
Zinci Chlo'ridum, *Caustic and astringent.*
Liquor Zinci Chlo'ridi, *External use.*
Zinci Carbo'nas Præcipita'tus, *Ph. p. and external use.*
Zinci Iodidum, gr. i—v, .06—.30.
Zinci Phosphidum, gr. $\frac{1}{10}$—$\frac{1}{3}$, .006—.02.
Zinci Sulphas. *White Vitriol.*
Emetic, gr. x—xxx, grm. .60—2.
Zinci Valeria'nas, gr. ss—iii .03—.20.
Zin'giber.—GINGER. *The rhizome of Zingiber officinale.*
Zingib'eris, gr. v.—xv, grm. .30—1.
Oleoresina Zingiberis, ♏ ss—ii, .03—.10.
Extractum Zingiberis Fluidum, ♏ v—xv, .30—1.
Tinctura Zingiberis, ♏ xx—℥ i, 1.30—4.
Syrupus Zingiberis, *As vehicle.*
Pulvis Aromaticus, gr. x—xxx, .65—2.
Trochisci Zingiberis, i = ♏ ii *of Tincture.*

CHAPTER VIII.

THE METRIC SYSTEM.

BESIDES the system of weights and measures used in the Pharmacopœia, there is another system, already alluded to, which has many advantages peculiar to itself; and which is now coming into such general use, that an acquaintance with it is necessary to every educated physician.

I refer to the so-called French or Metric System.

This system has as its unit the Meter (= 39.37 inches), which is the ten-millionth part of the distance from the pole to the equator. From this as a basis, all other measures and weights are formed. The system is arranged on the decimal scale; that is, all the divisions are connected by the multiple ten, in exactly the same way as the coins in the U. S. Monetary system. The names given to the different divisions and multiples of the unit are formed in each case by a certain prefix, derived from the Latin or Greek, which is placed before the name of the unit. They are

For Subdivision.

Latin

- Milli (from Mille) indicates the $\frac{1}{1000}$ of the unit.
- Centi (" Centum) " " $\frac{1}{100}$ " " "
- Deci (" Decem) " " $\frac{1}{10}$ " " "

For Multiplication.

Greek

- Deca (from *Δεκα*) indicates 10 times the unit.
- Hecto (" *Ἑκατον*) " 100 " " "
- Kilo (" *Χιλιος*) " 1000 " " "
- Myria (" *Μυριας*) " 10,000 " " "

The Units.*

Weight	*Length*	*Surfaces*	*Cubic Capacity*
Gram.	Meter.	Are.	Liter.

It is the custom in all countries where the metric system is used, in writing prescriptions to express all quantities by weight, fluids as well as solids being expressed in this way. We have only to do then with the *gram* and its decimal divisions, that being the name given to the unit of weight.

A Gram is the weight of one cubic centimeter of water at 4° C. †. The subdivisions of the gram are the Milligram, Centigram, and Decigram.

* I have adopted the terms meter, etc., according to the recommendation of the Boston Metric Bureau. This has been done also by Profs. Stillé and Maisch in the new National Dispensatory. Recently Prof. Oldberg has done the same. It certainly is more "English," than Gramme, etc., besides being more convenient.

† Water is taken at this temperature, because it is then at its greatest density 4° c = 39° Fahr.

1 Gram = the weight of 1 C.C.* of water at 4° C.	written	1.
1 Decigram = $\frac{1}{10}$ of a Gram	"	.1
1 Centigram = $\frac{1}{100}$ " "	"	.01
1 Milligram = $\frac{1}{1000}$ " "	"	.001

In practice the decigram is disregarded, and every thing expressed in terms of grams and centigrams; in the same way as we disregard our dimes and express every thing in terms of dollars and cents. The milligram is commonly used when we have to do with a certain number of tenths of a centigram alone; in the same way as we use the term mill. 21.146 grams would generally be read 21 grams, $14\frac{6}{10}$ centigrams; or, as we would say in terms of dollars and cents, $21 and $14\frac{6}{10}$ cents. It might also be read 21 grams, 146 milligrams. This is merely a matter of habit. The decagram, hectogram and kilogram are not used in prescriptions, simply the number of grams being expressed.

In writing prescriptions for solids then, we have only to know the dose in terms of grams, and the whole affair becomes very simple. The mathematical calculation being practically the same as when the apothecaries weights are employed, only simplified by the use of the decimal system.

Let us suppose, for example, that we desire to write for some pills, each one to contain Aloes .05 Gm.,† Ferri Sulphas .10, Ext. Belladon .015. Following out the rule given in a previous chapter we should have:

* C.C. is the sign for cubic centimeter.

† Gm. is the symbol for grams, adopted in the U. S. Marine Hospital Service. The number should always precede the sign.

℞.	Gramma.
Aloes Purificatæ	.50
Ferri Sulphatis	1.
Ext. Belladonnæ	.15

M. Divide in pilulas decem.

In writing in this system we must of course do away with the inconvenient Roman numerals, and use the common Arabic characters. In countries where the metric system is in full force, it is not customary to use any sign or symbol for grams ; it being understood always that grams are meant. In this country, however, it is necessary for the present in order to prevent confusion, that the word *Gramma*, contraction for the Latin *Grammaria*, should be written out in full, over the column of figures, as indicated above. It has been suggested that prescription paper should be ruled in the same way as our account books are ruled, with a line to separate dollars and cents. This would prevent any mistakes from misplacing the decimal point.

If now we desire to put a fluid preparation into our prescription, an element is at once introduced, which *may* cause very considerable confusion. We direct the apothecary to dispense all medicines by weight, but our patients, not having any scales and weights at hand, must continue to divide out the doses, as of old by volume, viz. : by the traditional teaspoonful, etc. Now a given bulk, say 1. C.C. of Chloroform weighs nearly double the same volume

of Ether; so that the relations between a given weight of fluid and a teaspoonful change with the specific gravity of the fluid. This fact must be constantly borne in mind, in calculating the total bulk of the mixture. A teaspoonful or fluid drachm of water weighs 3.75 grams, while a fluid drachm of Chloroform weighs nearly 5.50, and a fluid drachm of Ether only 2.80. Most of the officinal liquid preparations, which are intended for internal administration, such as the liquors, dilute acids, waters, etc., do not materially differ in bulk from the same weight of water: in other words, their specific gravity is the same. This also applies to the tinctures which are made with diluted alcohol, and to most of the fluid extracts.

The spirits, the tinctures made with alcohol,* and the fixed and volatile oils, are somewhat lighter; so that the same weight is a little more bulky.† This difference is so slight, being only 10 centigrams in each cubic centimeter, or $\frac{1}{10}$th, that it may generally be disregarded; unless the bulk of a mixture is composed of them. In that case $\frac{1}{10}$th less by

* There are the Tinctures of Aconite, Aloes and Myrrh, Asafœtida, Sweet Orange-peel, Benzoin, Benzoin Comp., Bryonia, Cannabis Indicæ, Cantharides, Cimicifuga, Gelsemium, Guiæ, Iodine, Myrrh, Physostigma, Pyrethrum, Sumbul, Tolu, Veratrum Viride and Ginger. Total, 20.

† The specific gravity of a few of the fluid extracts differs very materially from that of water. From data furnished by my friend, Dr. Edward Squibb, I have computed the following: Squills 1.230, Liquorice, 1.160, Wild Cherry 1.140, Aconite root, 928, Ginger, 849, Cubeb, 816. These are the most striking variations.

weight will give the same bulk as the same weight of water.

This leaves only a few substances or preparations which can cause any difficulty; they are Ether, the Compound Spirits of Ether, the Spirits of Nitric Ether, Glycerine, the Syrups and Chloroform. Stronger Ether has a specific gravity of .728, so that 3 parts by weight occupy about the same space as 4 parts by weight of water. It should be remembered, however, that when mixed with equal parts of water it loses $\frac{1}{8}$th its bulk. The specific gravity of Spts. Æther Co. is .815 and of Spts. Æther Nitrosi .837, so that 4 parts by weight of either occupies about the same space as 5 parts of water. In Glycerine the specific gravity is 1.25, so that the relation of weight to volume is as 5:4; the Syrups, specific gravity of 1.317, have the relation of 4:3; and Chloroform, having the specific gravity of 1.48, is nearly as 3:2.

In prescribing then, if we wish to get a bulk of any of these drugs equivalent to that of a given weight of water, we must order by weight of

TABLE.

Spirits, Tinctures and oils,	$\frac{9}{10}$ or $\frac{1}{10}$	less		than the weight of the same bulk of water.
Stronger Ether,	$\frac{3}{4}$ "	$\frac{1}{4}$	"	
Spirit of Nitric Ether, / Comp'd Spirit of Ether,	$\frac{4}{5}$ "	$\frac{1}{5}$	"	
Glycerine,	$\frac{5}{4}$ "	$\frac{1}{4}$	more	
Syrups,	$\frac{4}{3}$ "	$\frac{1}{3}$	"	
Chloroform,	$\frac{3}{2}$ "	$\frac{1}{2}$	"	

If the weight is given and we wish to estimate the bulk, then we must use the fractions in the first column, *but inverted.* If for instance we wish to make up a prescription already containing 50 grams to a bulk equivalent to 100 grams of water (100 C.C.) by the addition of glycerine, then we must add not 50, but 60 ($\frac{5}{4}$ of 50) grams of the glycerine. If on the other hand we have a prescription containing 50 grams of glycerine, and we desire to make up the bulk to 100 C.C. by the addition of water, we must count the glycerine as only 40 C.C. ($\frac{4}{5}$ of 50), and consequently add 60 grams of water.

The difficulties which these computations involve are more apparent than real. Ether and its compound spirit are almost never prescribed as parts of a mixture, being generally ordered alone, or at most mixed with a considerable bulk of water, in which they may be counted as of equal specific gravity. Chloroform also is rarely prescribed except alone, or as part of a mixture for external application, it being generally ordered for internal administration in the form of the spirit which differs little in sp. gr. from water. The difference in the case of sweet spirit of nitre is so slight, that for small quantities, it may be disregarded. The same is true in the case of the spirits, tinctures and oils. This leaves only glycerine and the syrups; and a very little practice will enable the prescriber to make the proper allowance, for these two preparations. *Salts in solution may be regarded as about the equivalent of ½ to ⅓ their

* *See note, page 153.*

weights of water (Maisch). This need only be taken into account when relatively very large quantities are ordered.

The following *illustrations* will aid in understanding these rules. Suppose it is required to write for a mixture to contain in each tablespoonful dose, Acid. Phosphor. Dil., .60; Spts. Chloroformi, .60; Tr. Ferri Chlor., .50, and Infus. Quassiæ, as a vehicle. Here as before we must first decide on how large a mixture is desirable. Bottles can now be had which hold exactly 25, 50, 100, 200, etc., cubic centimeters, so that it is much better and more in consonance with the metric system, more "metrical," if we may be allowed the expression, to regulate the bulk of our prescriptions according to these bottles, instead of the old-style bottles, and so drop all appearance of a dependence on the old system. As the dose in the example before us is large, we may order a large mixture, say 200 grams. As a tablespoon holds about 20 grams (of water), this will give just 10 doses. Hence we shall have 6 gm. each for the acid and spirit; 5 gm. for the tincture, and then the mixture can be ordered to be made up to 200 gm. or C.C., by the addition of the infusion, thus:

℞.	Gramma.
Acid. Phosphor. Dil.,	
Spiritus Chloroformi,	*āā* 6.
Tr. Ferri Chlor.,	5.
Infus Quassiæ,	*ad* 200.

M. Sig.—Dose, one tablespoonful.

The form of writing with *ad** is not generally applicable to the metric system, but may be used when all the ingredients are fluids, and of the same specific gravity.

As another example, let us write for a liniment, to contain equal parts of Tr. of Belladonnæ, Tr. of Aconite Root, Chloroform and Glycerine. The proper amount for a liniment is generally 100 grams. We should order then 25 of each of the tinctures, 38 (25 + ½ of 25) of Chloroform and 30 (25 + ¼ of 25) of Glycerine, thus :

℞.	Gramma.	
Tinct. Aconiti,		
Tinct. Belladonnæ,	*aa* 25.=50	C.C.
Chloroformi Purificati,	38.=25	"
Glycerini,	30.=25	"
	100	

Sig.—For external use only.

The true amount of the Chloroform would be 37.50, but in cases where the fraction is small, and in cases of inert substances in large quantities, it is customary to "round off," and either not to take notice of the decimals at all, or if they come to five or more to make it up to the unit.

Again, suppose a mixture is desired which will contain Quin. Sulph. .20 and Tr. Ferri. Chlor. .60, in a dose, with oil of peppermint to flavor it, and

* It has been suggested that the pharmacist might be ordered, after having weighed all the other articles and put them in, to make up the whole mixture to a certain bulk, or number of cubic centimetres. This plan has its advantage, and has been adopted by some. It will apply to any mixture.

glycerine and water as vehicles. If a mixture of the amount of 100 grams is decided upon, there will be just 20 doses, as a teaspoon holds about 5 grams.* This will give 4. of quinine and 12. of iron; .05 to each 25. is quite enough of the oil, which gives, say, .20 for the mixture of 100. The proper amount of glycerine would be one-half of the remainder by bulk. If we count the quinine as 3. in bulk, and disregard the oil, this would leave just 85 C. C. to be filled up, which would be done by 50. (40 + ¼ of 40) of glycerine and 45. of water.

℞.	Gramma.
Quininæ Sulphatis,	4.
Tr. Ferri. Chloridi,	12.
Ol. Menth. Pip.,	.20
Glycerini,	50.
Aquæ,	45.

M. Sig.—One teaspoonful three times a day.

To illustrate the use of preparations lighter than water, let us take the following:—

Write for a mixture to contain in each dose of a tablespoonful, Potas. Acetat., .60; Spts. Æther Nit., .80; Tr. Scillæ, .25, and the rest Infus. Scoparii. Taking the quantity desired as 200 grams, there would be 10 doses, which would give 6. for the potash, 8. for the nitre, and 2.50 for the squills. In estimating the bulk we must count the sweet spirit

* This is nearer the truth than the fiction that a teaspoon holds just a drachm or 4 grams. Teaspoons, of course, vary very much, but most of those of modern make hold only a little more than 5. C.C.

of nitre as 10. ($\frac{5}{4}$ of 8), which would give a total of 18, leaving 182 grams of the infusion.

℞.	Gramma.
Potas. Acetat.,	6.
Spts. Æther. Nit.	8.
Tr. Scillæ,	2.50
Infus. Scoparii,	180.

M. Sig.—Dose, a tablespoonful.

A more difficult example is as follows :—Write for a mixture to contain, Chloroform, .30, and Fluid Ext. of Wild Cherry, .70, in a teaspoonful dose. One-fourth of the whole to be of Glycerine and the rest of Syrup of Tolu. We will choose 50 grams as the total, giving just 10 doses. Multiplying this and rounding off we have 3. for the chloroform and 7. for the fl. ext. For the glycerine we should have, say 15 ($\frac{5}{4}$ of 12.50=15.60). This would give a bulk of 2. (C. C.) for chloroform ($\frac{2}{3}$ of 3.), 7. for the fluid extract, and 12. for the glycerine ($\frac{4}{5}$ of 15), total, say 20. To make up the bulk to 50. (C.C.) then, we want a bulk of syrup the equivalent of 30 grams of water, or about 40. ($\frac{4}{3}$ of 30 = 40) grams.

℞.	Gramma.
Chloroformi Purificati,	3.
Ex. Pruni. Virgin. Fl.,	7.
Glycerini,	15.
Syr. Tolutani,	40.

M. Sig.—Dose, one teaspoonful.

The Metric in its Relations to the Apothecaries System.

Thus far nothing has been said of the relations which the metric system bears to the system of weights and measures used in the Pharmacopœia. The object has been to teach the student to write in the new system independently of the old; to think in it; to use it as a system complete in itself and not merely as a periphrase of the other. The student who begins in this way, and who learns the doses in both systems, will never meet with the difficulties which are opposed to the progress of the practitioner, or the student who has already familiarized himself with the old way only. For the sake of the latter class there are here appended rules for the conversion of either system into the other.

Conversion of Apothecaries weights and measures into grams. For all practical purposes it may be considered that one gram is equal to 15 grains Troy (more exactly 15.432). Therefore we get the following approximations :*

Gr. i.	= .06	Grams,	exactly	.06479
℈i.	= 1.30	"	"	1.2958
ʒi.	= 4.	"	"	3.8874
℥i.†	= 31.	"	"	31.103

* In changing to quantities under 5 grs. the grain may be considered as equal to .06, but in larger quantities it is much better to consider it as .065. If this is not done in very large quantities the error becomes quite considerable.

† The Avoirdupois ounce is equal to 28.35 grams.

So that in changing from the old into the new we should put .06 for each grain, 4. for each drachm, and 31. for an ounce.

From these facts may be very easily deduced the following

RULES * FOR EXPRESSING QUANTITY BY WEIGHT OF THE APOTHECARIES SYSTEM IN METRIC TERMS.

Rule A.—Reduce the quantity to grains and divide by 15. The quotient is in each case the number of grams representing (nearly) the same quantity.

Rule B.—Reduce each quantity to drachms and multiply the number by 4. The product is in each case the number of grams representing (nearly) the same quantity.

Rule C.—Reduce each quantity to ounces and multiply the number by 31. The product is in each case the number of grams, representing (nearly) the same quantity.

In changing *fluid measures to grams* we may employ the same rules to get results accurate enough for all practical purposes. But if greater exactness is required it must be remembered that one gram of water measures about 16 minims (exactly 16.231), consequently (one fluid ounce of water weighing 455.7 grs.), we have,

* Fourth Annual Report of the Surgeon General, 1877, with modifications.

1 ♏	=	.06 Grams,	exactly	.0616
1 f.ʒ	=	3.75 "	"	3.696
1 f.ℨ	=	30. "	"	29.576

In changing we may put .06 for each minim, 3.75 for each drachm, and 30. for each fluid ounce, provided of course that the specific gravity is the same, or nearly the same as that of water. The rules on the previous page would then apply to fluids if we substitute minims for grains, fluid drachm for drachm, and fluid ounce for ounce, and also, where greater exactness is required, substitute 16 for 15, 3.75 for 4, and 30 for 31.

If the specific gravities differ much from that of water, due allowance must be made according to the rules already given.

As a means of ready reference, to save the trouble of applying the rules, the following table, prepared by Prof. Maisch, will be found of value. Ether, Chloroform, the two extremes, are hardly included in the list, unless for small quantities, where the errors would be immaterial. (See opposite page).

A few examples will illustrate the application of these rules. Take, for instance, the prescription on page 54 to be converted into the metric system, and we should have by the application of rule A the following:—

℞.	Gramma.
Ext. Nuc. Vom.,	gr. vi. = .40
Pulv. Scammon.,	gr. xii. = .80
Pulv. Aloës,	

TABLE FOR CONVERTING APOTHECARIES WEIGHTS AND MEASURES INTO GRAMS.

Troy Weight.	Metric	Apothecaries Measure.	Grams for Liquids.		
Grains.	Grams.		Lighter* than water.	Spec. Grav.† of water.	Heavier‡ than water
1/64	.001	1 Minims	.055	.06	.08
1/60	.0015	2	.10	.12	.15
1/30	.002	3	.16	.18	.24
1/20	.003	4	.22	.24	.32
1/15	.004	5	.28	.30	.40
1/12	.005	6	.32	.36	.38
1/10	.006	7	.38	.42	.55
1/8	.008	8	.45	.50	65
1/6	.010	9	.50	.55	.73
1/4	.016	10	.55	.60	.80
1/3	.02	15	.80	.72	.96
1/2	.03	16	.90	1.00	1.32
1	.065	20	1.12	1.25	1.60
2	.13	25	1.40	1.55	2.00
3	.20	30	1.70	1.90	2.50
4	.26	35	2.00	2.20	2.90
5	.32	40	2.25	2.50	3.30
6	.39	48	2.70	3.00	4.00
8	.52	50	2.80	3.12	4.15
10	.65	60 (f ʒi.)	3.40	3.75	5.00
15	1.00	72	4.00	4.50	6.00
20 (ʒi.)	1.30	80	4.50	5.00	6.65
24	1.50	90	5.10	5.60	7.50
26	1.62	96	5.40	6.00	8.00
30	1.95	100	5.60	6.25	8.30
40	2.60	120	6.75	7.50	10.00
50	3.20	160	9.00	10.00	13.30
60 (ʒi.)	3.90	180	10.10	11.25	15.00
120 (ʒii.)	7.80	240 (f ʒss.)	13.50	15.00	20.00
180	11.65	f ʒv.	16.90	18.75	25.00
240	15.50	f ʒvi.	20.25	22.50	30.00
300	19.40	f ʒvii.	23.60	26.25	35.00
360	23.30	f ʒi.	27.00	30.00	40.00
420	27.20	f ʒii.	54.	60.00	80.00
480	31.10	f ʒiii.	81.00	90.00	120.00
ʒii.	62.20	f ʒiv.	108.00	120.00	160.00
ʒiv.	124.40	f ʒv.	135.00	150.00	200.00
ʒvi.	186.60	f ʒvi.	162.00	180.00	240.00
ʒviii.	248.80	f ʒviii.	216.00	240.00	320.00

* Lighter than water are tinctures, spirits, Comp'd Spts. of Ether, Sweet Spirit of Nitre, and fixed and volatile oils. Æther fortior is not included.

† Same as water are waters, liquids, decoctions, infusions, most fluid extracts and tincture made with dilute alcohol. (Compare page 123.)

‡ Heavier than water are syrups, glycerine, a few fluid extracts and chloroform, which is hardly included.

Pulv. Rhei,	*āā* gr. ix.	=	.60
Alcohol,	q.s.		q.s.

M. Div. in Pil. xii.

Again, take the mixture on page 59.

℞.		Gramma.
Quin. Sulphat,	gr. xvi.	1.
Strych. Sulphat,	gr. ss.	.03
Acid. Hydrochlor. Dil.,	♏. lxxx.	5.
Tr. Zingiberis,	℥ ii.	7.50
Tr. Card. Co.,	℥ iiss.	9.50
Syrupi,	ℨ ii.	80.
Aquam,	*ad* ℥ iv.	40.

M. Sig. Dose, a tablespoonful.

Here the 16 grains may very correctly be rounded off into one gram ; as one gram is .06 one-half will be .03 ; 80 minims will be 80 divided by 16 or 5. ; two fluid ounces would be just 7.50 and two and a half would be 9.50. ; the two fluid ounces of syrup would be ⅔ of 60 = 80. The total of these is 82, viz., 5 + 7.50. + 9.50. + 60., and would leave 38. of water. The 80. grams of syrup would count in bulk, it must be remembered, the same as two ounces of water, that is, as 60. In translating formulæ a sufficiently accurate result is arrived at, and a true decimal or metric prescription is produced, by considering each grain as equalling .05 Gm., and each ounce 25. Gm. While the relative proportions are thus pretty accurately preserved the translation is facilitated.

TABLE.

Metric Weights.		*Exact Equivalents in grains*		*Approximate Equivalents in grains.*
.001	=	.0154	=	$\frac{1}{65}$
.002		.0308		$\frac{1}{32}$
.003		.0463		$\frac{1}{22}$
.004		.0617		$\frac{1}{16}$
.005		.0771		$\frac{1}{13}$
.006		.0926		$\frac{1}{11}$
.007		.1080		$\frac{1}{9}$
.008		.1234		$\frac{1}{8}$
.009		.1389		$\frac{1}{7}$
.01		.1543		$\frac{1}{6}$
.02		.3086		$\frac{1}{3}$
.03		.4630		$\frac{6}{13}$
.04		.6173		$\frac{7}{11}$
.05		.7717		$\frac{3}{4}$
.06		.9260		$\frac{9}{10}$
.07		1.0803		1
.08		1.2347		$1\frac{1}{4}$
.09		1.3890		$1\frac{1}{3}$
.10		1.543		$1\frac{1}{2}$
.20		3.086		3
.30		4.630		$4\frac{1}{2}$
.40		6.173		6
.50		7.717		$7\frac{1}{2}$
.60		9.260		9
.70		10.803		11
.80		12.347		$12\frac{1}{2}$
.90		13.890		14

Metric Weights.		*Exact Equivalents in grains.*		*Approximate Equivalents in grains.*
1.00	=	15.432	=	15
2.00		30.864		℥ss
3.00		46.296		℈ii
4.00		61.728		℥i.
5.00		77.160		℈iv.
6.00		92.592		℥iss.
7.00		108.024		℈vss.
8.00		123.456		℥ii.
9.00		138.888		℈vii.
10.00		154.320		℥iiss.

The Advantage of the Metric System.

The question will be very certain to arise in the mind of every student: What are the advantages of the Metric System, and will it pay to learn, and to use it?

The latter question may be very readily answered, in part at least, in the affirmative. It certainly will pay every medical student to thoroughly master and familiarize himself with this system. For there can be very little doubt that, within the natural life-time of every one, who, from this time forth, shall study medicine, the Metric System will be the "law of the land," and its use compulsory. The great progress which it has made in the last ten years, and the present steadily increasing interest in the subject, fully warrant this statement.

If this is to be the case, then the period of student life, before the old style has become ground in by long use, has become a second nature, as it were, is the time most fitted for its reception. That it should be learned to the exclusion of the old method is certainly not advisable. The two should be studied side by side, neither to the exclusion of the other. Another reason why it should be learned is that it is fast coming into use in American medical literature, and is the only style found in *any* foreign literature except the English.

Those who accustom themselves to its use will find it so much simpler that they will doubtless prefer to use it altogether. This can now be done in most of our large cities, where the best pharmacists are supplied with the requisite weights, as is constantly done by a number of our New York and by many Boston physicians. In the country or in small places where the physician must dispense his own drugs, there is nothing to hinder its use and every thing in its favor, the method of dispensing, especially in the case of fluids, is so much simpler and neater as to recommend itself at once. Perhaps a few hints on this point may not be out of place. Put the bottle in the scale and balance it with shot, a dish of which can be always kept handy, then put in one of the desired weights, pour in the preparation until it balances, then another and so on. When done in this way there is no waste, no dirty graduates to wash; and a very little practice will enable the

dispenser to make up the prescription in this way, with an exactitude unattainable by the old mixed system of weights and measures.

There are certain inherent advantages which the Metric System possesses. In the first place it is a decimal system. We all of us appreciate the advantages of decimals from our familiarity with it in our monetary system. We would be very loth to go back to the complicated English system of pounds, shillings and pence. Again, it uses the Arabic instead of the less familiar and less convenient Roman numerals. It does away with the symbols of the different units, and thus reduces the chances of mistakes from carelessly made signs. It also gives a like unit for both solids and fluids. Again, "it provides denominations of weights applicable to the smallest quantities which the physician or pharmacist can be called upon to prescribe or dispense; the old grain being by far too large a unit for the measurement of the alkaloids and glucosides which modern chemistry has added to our Materia Medica." * Another advantage is derived from the convenience in altering formulæ, when it is desirable to change the quantity of the active ingredients, the quantity of the menstrum and dose being the same † Other advantages are, that there is here a nomenclature which is self-defining and expressive of values, and that the base of the whole system is unalterable.

* Dr. T. B. Curtis, Boston, Med. Surg. Jl., Dec. 6, 1877.

† E. Wigglesworth, Louisville "Med. News," April, 1878.

Another very considerable gain to be derived from the adoption of the Metric System, by the profession as a whole, is the uniformity thus secured. Our present system is uniform with none, not even with the English, for the English weights and measures, while having the same names as ours, have quite different values, as has already been explained. On the other hand the Metric System has been adopted by nearly all the different countries on the continent of Europe, and in America by Mexico and by many of the South American Republics, so that its adoption would bring us into agreement with nearly the whole civilized world.

Another advantage which we cannot enjoy in full until our Pharmacopœia is arranged in conformity with the decimal system, is the appreciation of quantitative ratios in different formulæ and the resulting preparations. Let us take Fowler's Solution (T. B. Curtis), as prepared according to the formula of the French Codex. It contains Arsenious Acid, 5 grams ; Carbonate of Potassium, 5 grams ; distilled water, 500 grams ; of Alcohol, 15 grams. When fully prepared, and after boiling, it weighs just 500 grams and thus contains one hundreth of its weight of arsenious acid. Of course the amount of acid in any given weight of liquid is easily recognized ; very much more so than in our own officinal preparation.

The adoption of the Metric System should involve another and more radical change than the mere sub-

stitution of one series of weights for another. In every country where it has been adopted, it is customary to weigh not only solids but fluids as well. The adoption of the gravimetric in place of the present mixed volumetric and gravimetric method, should go hand in hand with the adoption of the Metric System. While this would at first tend to introduce some considerable confusion, it would, on the whole, be a very great gain. It would secure greater accuracy in dispensing, and when once learned would be found more simple and convenient than the method now in use. The difficulties have already been explained and illustrated. It is to be regretted that in the U. S. Marine-Hospital Service this was not done when the Metric System was introduced.

That the gravimetric method is necessarily a part of the French system is not, of course, maintained. There are metric measures bearing a fixed and convenient relation to the weights, which might very well be used. But the gravimetric method has so many inherent advantages that it would be far better when making a change to make it complete. This "method is the one employed by all nations using the Metric System, and it is of the highest importance to avoid courting a disagreeable notoriety by an affected and purposeless singularity based upon indolence and selfishness."—(*Wigglesworth.*)

The following tables, although but little used in prescription writing, will be found of use to those interested in the subject. In order to accustom one's self to metric measure it will be well to remember that the U. S. "nickel" five-cent piece weighs five grams, and is two centimeters in diameter.

Metric Measures of Length.

1 Millimeter	0.001	=	.039 inches.	
1 Centimeter	0.01	=	.393 "	
1 Decimeter	0.1	=	3.937 "	
1 Meter	1.	=	39.370 "	=3.28 feet=1.1 yards.
1 Kilometer	1000.	=	.62 miles.	

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1 Inch = 25.4 Millimeters.
1 Foot = .3048 Meters.
1 Yard = .9144 "
1 Mile = 1.61 Kilometers.

Measure of Capacity.

1 Milliliter =	1.	C.C.	= f 3 .27
1 Centiliter =	10.	"	= f 3 2.70
1 Deciliter =	100.	"	= f ℥ 3.38
1 Liter	= 1000.	"	= 2.1 Pints = .264 Gal. = .11 Pecks.
1 Hectoliter			= 2.8 Bushels.

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1 Fluid Drachm	= 3.7	C. C.
1 " Ounce	= 29.57	"
1 Pint	= .473	Liters.
1 Gallon	= 3.78	"
1 Peck	= 8.8	"
1 Bushel	= 35.	"

Measures of Surface.

1 Centiare = 1 Sq. Meter = 10.7 Sq. Ft.
1 Are = 100 " Meters = 119.6 Sq. Yds.
1 Hectare = 10,000 " " = 2.47 Acres.

Solid Measure.

1 Decistere = .1 Cubic Meter = 3.5 Cubic Feet.
1 Stere = 1. " " = 35.317 Cubic Feet.
1 Decastere = 10. " " = 13. Cubic Yards.

Temperature.

36° Centigrade	. . . . .	96°.8 Fahrenheit.
37° "	. . . . .	98°.6 "
38° "	. . . . .	100°.4 "
39° "	. . . . .	102°.2 "
40° "	. . . . .	104°. "
41° "	. . . . .	105°.8 "
42° "	. . . . .	107°.6 "

Cent.		Fahr.	Cent.		Fahr.
1°	=	1°.8	6°	=	10.°8
2°	=	3°.6	7°	=	12°.6
3°	=	5°.4	8°	=	14°.4
4°	=	7°.2	9°	=	16°.2
5°	=	9°.			

To change C. into F., use the table and add 32. To change F. into C., subtract 32 and use the table; or, multiply C. by 1.8, add 32=F.

Note.—To test the influence of Salts in solution on bulk, the following experiments were made: 4 grams of certain substances were dissolved in 10 c.c. of water, or, in the case of Quinine, dilute acid and the increase in bulk of the solution noted, with the following results: Pot. Iodid. increase 1.2, c.c. Pot. Bromid. 1.2, Pot. Carb. 1.4, Pot. Bicarb. 1.5, Pot. Cit. 1.7, Am. Bromid. 1.9, Ferri. Sulph. 2, Chloral 2.2, Ferri. Am. Cit. 2.2, Pot. Acetat. 2.3, Am. Carb. 2.4, Sach. Alb. 2.4, Am. Chlorid. 3., Quin. Sulph. 3.1. For these experiments I am indebted to Mr. Joseph Clowry, Asst. Apothecary to the N. Y. Dispensary. *See page* 125.

CHAPTER IX.

MEDICINAL COMBINATIONS.

THE tendency in modern therepeutics is unquestionably towards simplicity in prescriptions. Few modern formulæ contain more than one or two active agents. To give as little medicine as possible is a rule popular with a large and very influential part of the profession. Without seeking to trace out the causes of this tendency, may we not well ask if there is not danger of its often carrying us too far. Is not this simplicity sometimes gained at the expense of our patients, and if so, is it not sometimes due to an ignorance both of the action of remedies, and of the proper methods of combining them. There can be no doubt but that a judicious combination will often produce effects for good, which might be sought in vain from the use of any one remedy alone. From these considerations we feel justified in introducing this chapter in a book on prescription writing.

Every writer on this subject for the last fifty years has drawn largely from the writings of Dr. John Ayrton Paris. His method of presenting the subject is so clear and perfect that it has never been improved upon. Like several others, I shall content myself with giving a fair and full abstract of Dr. Paris' teachings.

The objects which Dr. Paris* declares are to be sought in combining medicines may be considered under five heads.

1. To Promote the Action of the Basis.

A. By combining the several different forms or preparations of the same substance.—As when an infusion is strengthened by the addition of a fluid-extract or tincture, in cases where all the active principles are not soluble in the same vehicle; Digitalis may be taken as an example, all the active principle not being soluble in water. Another example is Brown-Sequard's "epilepsy mixture," where two bromides are combined.

B. By combining the basis with substances which are of the same nature.—That is substances which are individually capable of producing the same effect but with less energy than when combined. This is but the law laid down by Dr. Fordyce, "that a combination of similar remedies will produce a more certain, speedy and considerable effect than an equivalent dose of any single one." Many illustrations of this rule might be given; for example, the combination

* Paris Pharmacologia, 1st Am. Ed.

of chloral and bromide of potassium is more certain as an *hypnotic* than either one alone. This rule is very generally followed in the case of *cathartic* medicines, particularly those of the more active class. Not only is the combination in this case more active but it is also more manageable and less liable to irritate. Some cathartics, like Gamboge, are never given alone. The class of *Diuretics* is another in which great advantages are to be derived from combinations. Their uncertain powers are thus rendered much surer. *Aromatics* also are very generally combined, when their special action alone is sought. Nearly all "carminatives" have a large number of ingredients. *Expectorants* also are very generally combined in the same prescription as in the famous "Stoke's Expectorant."

C. By combining with the basis substances of a different nature, which do not exert any chemical influence upon it, but in some unknown way increases its power. —A commonly given example of this is the increased diuretic power of Squills when combined with Calomel. The combination of Opium, Capsicum and Quinine to break an intermittent, and other examples, will readily suggest themselves.

2.—To Correct the Operation of the Basis by Obviating any Unpleasant Effects it might be likely to Occasion and which might Prevent its Intended Action.

A. By chemically neutralizing or mechanically separat

ing the offending ingredients.—Scammony may be deprived of its acrimony by triturating it with milk and other substances, by trituration with mucilage, barley water, etc.

B. By adding some substance calculated to guard against its deleterious influence.—For instance, the oxide of zinc is recommended for some forms of diarrhœa, but if it meets with an acid in the stomach, the resulting compounds may be very irritating. To prevent this it is exhibited in combination with an alkali. The dilution of strong alcoholics, and other irritants, by water or other suitable diluents, is another ready illustration. The constipating effect of Opium may be obviated by Aloes, while the unpleasant after effects may be greatly reduced by Belladonna. The griping tendency of most purgatives may be prevented by a combination with aromatics. The same tendency in Senna is overcome by exhibiting it with a saline, as in the "Black Draught."

3. To Obtain the Joint Action of Two or More Medicines.

A. By uniting medicines which are calculated to produce the same ultimate results, but by modes of operation totally different.—The combination of members of the different classes of cathartics is sufficiently familiar. Some act by increasing peristalsis, others by preventing absorption, and others by increasing the secretions, and yet all produce the same ultimate

results when combined. The same is true in the case of emetics. Some act directly on the stomach and some on the nerve centers. If severe and certain emesis is desired it can best be obtained by a simultaneous exhibition of members of each group. The combination of Buchu and a salt of Potash in the uric acid diathesis is also a good example of the advantages to be derived from combinations of this kind.

B. By combining medicines which have entirely different powers, and which are required to obviate different symptoms, or to assume different indications.—Under this head will come the greatest number of medicinal combinations. The desire to combat many different symptoms by a multitudinous combination have often led to ridiculous excesses. There are several prescriptions by Huxham extant which contain 400 substances each. What the effect of such an incongruous mixture can be is hard to imagine.

A happy medium, which, while not failing to take advantage of the great good which may be obtained from a judicious combination, does not run into extremes, is what is to be aimed at. It is not the multiplicity of small shot, some of which may hit the mark it is true, which does the greatest execution, but the well directed rifle-ball. In proportion as a prescription is complicated so are its chances of failure multiplied. Each ingredient should be added with a clearly fixed and determinate idea of what its operation will be and what the indications are

Nothing should be put in without a clearly defined purpose in the mind of the prescriber.

In combining remedies having different powers, care must be exercised that no two things are put together which exert directly opposite physiological or therepeutic action.

4. To Obtain a new Active Remedy not Afforded by any Single Substance.

A. By combining medicines which, when combined, produce an effect not produced by either alone.—The well-known effect of Dover's Powder in producing a powerful diaphoretic action, an action not excited in any such degree by either of its components alone, is a very good example of the object. The number of such combinations is however limited.

B. By combining substances which have the property of acting chemically upon each other; the result of which is the formation of new compounds.—This can be illustrated by several examples drawn from the officinal preparations. The mixture Ferri Comp. or the Pil. Ferri Comp. in which the Sulphate of Iron is converted into a carbonate by the action of the Carbonate of Soda or Potash. Yellow and Black Wash are also examples under this head. The combination of Hydrochloric Acid and Ammonia gas, by which nascent chloride of ammonium is produced, is sometimes used as an inhalation.

5. To Afford a Convenient and Agreeable Form.

Various considerations should influence us in selecting the form for a remedy. The remedies which are suitable for the various forms of pills, mixtures, draughts, etc., has already been pointed out.

Care should be taken to have the form as agreeable both to the sight and taste as its nature and the good of the patient will permit. At the same time the caprice of a patient should not influence us unduly in the choice of a remedy. That which, in the opinion of the writer, will do the most good should be written for and its form rendered as pleasing and attractive as circumstances will allow.

In the choice of a vehicle that one should be selected whose effect will be likely to correspond with the intention of the other ingredients.

The following sentence from Dr. Paris contains so much of sense and wisdom that I reproduce it here. "The perfection of a medicinal prescription may be defined by three words; it should be Precise (in its *directions*), Concise (in its *construction*), and Decisive (in its *operation*). It should carry upon its very face an air of energy and decision, and teach intelligibly the indication which it is to fulfil. It may be laid down as a proposition which is not in much danger of being controverted, that *where the intention of a medicinal compound is obscure its operation will be imbecile.*"

CHAPTER X.

INCOMPATIBILITY.

THE subject of incompatibility is one which is altogether too little understood and to which too little attention has hitherto been paid. The reason is, perhaps, that no successful attempt has been made to bring this subject into a small compass, and to educe the general laws which govern it. Long lists of so-called incompatibles are to be found in most of the reference books, but they are often imperfect, and while it is manifestly impossible to commit them to memory, they cannot always be at hand for reference. With the aid * of an accomplished Chemist and Pharmacist, there is here presented a short and concise review of the subject which it is to be hoped will remove many of the difficulties and render it easily understood and remembered.

Under the general term "Incompatibility," in pre-

* The introductory and concluding sentences excepted, this chapter was composed almost entirely by my friend Mr. Fred. Hoffmann, Ph. D.

scriptions, may be understood the association of remedies in the formulating of prescriptions in such a mode as to produce

1.—Unsightly, disagreeable and noxious mixtures.

2.—Mixtures whose component parts undergo, at once or in a short time, a chemical change, losing or altering thereby their original properties, and forming new compounds which may lessen, destroy, or otherwise modify their therapeutical and physiological action, or give rise to the formation of dangerous or explosive compounds, or

3.—To combine remedies of an antagonistic therapeutical effect.

As *instances* of the *first kind* of incompatibles may be mentioned the association of oils, balsams, resins or resinoids or their alcoholic solutions, as also of chloroform, with water or aqueous solutions or vice versa; of the *second class* the unintentional association of alkaline hydrates and carbonates with free acids, or with solutions of metallic salts; the combination of powerful oxidizers like peracids and peroxides, with readily oxidizable and combustible substances, for instance, potassium chlorate or permanganate with vegetable powders, tannin, sugar, sulphur and sulphides, and with glycerine, alcohols, alcoholic tinctures and ether; of strong nitric, nitro-hydrochloric, and chromic acids with oils, alcoholic and other fluid or solid organic substances; and of the *third class*, the combination of an opiate with a cathartic when the effect of the latter is intended.

While the first mentioned kind of incompatibles in prescriptions, generally, is of less consequence and in many cases, can be overcome or improved by the knowledge, skill and proper judgment of the pharmacist, the latter two, in all common cases, cannot well be modified unless by the prescriber, or with his consent, and therefore, will pass to his credit and responsibility. This is particularly the case, and of too frequent occurrence with the so-called chemical incompatibles, and requires on the part of both professor and students, and of practitioners, due consideration. It is, however, not alone the comparatively small amount of an average familiarity with the common solubilities and solvents, and with the main fundamental laws of chemical affinities, that is requisite, but also a fair measure of ready discrimination and judgment in the prompt application of such knowledge.

In the compass of this treatise we have to confine ourselves to briefly referring to the principal classes of changes originating from differences in, or disturbances of, solvents, or from the formation of insoluble compounds from the association of soluble ones.

Solvents and Solubilities. The two general solvents are water and alcohol and their mixture in various proportions. Water is the universal solvent for almost all soluble salts, vegetable extractive and albuminous matters, gums, sugars, acids, gelatine, whilst alcohol is the solvent for resinoids, resins, balsams, gum-resins, essential oils, and all drugs con-

taining such as active principles. The solvent power of each of these opposite solvents for their special class of substances, decreases proportionally with the amount of the other one added; for instance: strong aqueous solutions of salts, of gum, gelatine, etc., deposit these, the more alcohol or alcoholic fluids are added; whilst, on the other hand, alcoholic solutions separate much or even all of their contained substances in proportion to the amount of water or aqueous solutions added. Thus if alcoholic solutions of iodine, camphor, essential oils, tinctures of aloes, assafœtida, benzoin, myrrh and other gum-resins are mixed with water, decoctions, infusions or solutions of sugar, gum, salts, etc., a separation of the principles previously dissolved takes place.

All such combinations, therefore, will make unsightly, oftentimes unpleasant and unmanageable mixtures, which will be uncertain and perhaps inert for want of uniformity in the amount and proportions of dissolved and suspended or expelled ingredients. Consequently, the solubility of the component parts of prescriptions in either of these two solvents should be borne in mind, as well as the fact that the incompatibility in all these cases is a rather empirical one, resulting from differences of solubility and disturbances in the dissolving power and extent of solvents, and exercising no chemical change in either one.

Chemical Incompatibility. This is always due to and results from decomposition and the formation of new compounds whereby the properties and thera

peutical action of the original substances may be impaired, modified, or altogether changed. There are mainly three kinds of cases where, by improper association, medicinal chemicals may become incompatible ;

1. When free acids are combined with hydrates or carbonates ;

2. When two or more soluble salts are associated which, by interchange of base or acid, give rise to the formation of new compounds with different properties and therapeutical action ; and

3. When chemicals are brought in contact which may give rise to sudden and vehement or explosive chemical processes.

Instances of the latter kind of incompatibles have already been given on page 151. By far the largest number of chemical incompatibles originates, next to the inadvertent association of acids and hydrates or carbonates, from the association of compounds, which result in the formation of more or less insoluble, and therefore, in most cases, inert salts.

1. Free acids and the acidity of all preparations containing such, are neutralized by alkaline and metallic hydrates and carbonates ; for instance : Lime-water or bismuth carbonate with acidulous Pepsin ; ammonium or sodium carbonates or bi-carbonates with syrup of squills ; aromatic spirit of ammonia with syrup of lemon, etc.

2. Incompatibles on account of the formation of new and more or less insoluble compounds ; these

include a comparatively large number of medicinal chemicals which, however, when classified, may readily be borne in mind for general guidance and reference.

In this respect, the following are the main classes of more or less insoluble salts, which will be formed whenever their constituent parts are brought together in solutions:

The hydrates, carbonates, borates, phosphates, arseniates and tannates of most earthy and heavy metals and alkaloids, and the metallic sulphides.

Instances: lime-water or aromatic spirit of ammonia with tincture of chloride of iron, or solutions of mercury salts, or neutral solutions of quinia or morphia salts; ammonium, potassium and sodium carbonates or bi-carbonates with lime-water, solutions of magnesium sulphate, alum, zinc acetate or sulphate with solutions of salts of iron, manganese, bismuth, antimony, lead and of most alkaloids; ammonium or sodium phosphates with solutions of iron salts, with lime-water, solution of magnesium sulphate, of alum, etc.; liquor potassii arsenitis with lime-water, with solutions of basic salts of iron, of neutral salts, of quinia and morphia, etc.; solutions, decoctions, tinctures and extracts containing tannic acid with solutions of salts of iron, mercury, antimony, lead (as also with solutions containing albuminous substances and gelatine).

The sulphates of calcium of lead and of subsalts of mercury.

Instances: lime-water with solutions of quinia or morphia sulphates; solutions of lead acetate with zinc sulphate, or alum.

The chlorides, iodides, and bromides of bismuth,

silver, lead, and subsalts of mercury; the iodides of quinia, morphia and most alkaloids.

Instances: sodium chloride with silver nitrate, morphia chloride with lead acetate; alkaline iodides or bromides with bismuth carbonate or sub-nitrate, with lead acetate, with sub-chloride of mercury, or with neutral solutions of quinia, morphia, or strychnia salts.

3. Incompatibles on account of the formation of poisonous and, therefore, dangerous compounds.

Instances: Potassium iodide with potassium chlorate; hydrocyanic acid or potassium cyanide with metallic hydrates, carbonates, sub-nitrates or sub-chloride, such as bismuth carbonate, or nitrate, or calomel.

These general rules and instances embody the most important classes of incompatibilities to be avoided in the formulation of prescriptions, and may suffice to guard the prescriber against inadvertent and glaring errors in this respect. In order to do away, to a large extent, with most errors and risks in regard to incompatibles, and moreover in accordance with recommendable usage and progress, we cannot, in conclusion, but impress too much upon the mind of the practitioner the advice, whenever occasion and necessity prompt the formulation of a prescription,

1. To aim at the greatest possible simplicity in the kind and number of remedies.

2. To choose, when solvent, diluent or excipient are required or preferred, simple ones and, if possible, only one; for instance: for solutions, according

to the substance, water, simple syrup, glycerine, diluted or strong alcohol; for powders: sugar, sugar of milk, chocolate; for pills: liquorice, solid extracts, dextrine, gum, or starch paste.

3. Never to prescribe or employ concentrated mineral acids, either alone or in mixtures, unless in exceptional cases, but only the diluted officinal acids.

PHYSIOLOGICAL or THERAPEUTICAL INCOMPATIBLES. This is a subject which cannot be taken up here, as it belongs rather to the therapeutist, and is fully treated of elsewhere. Those who wish for such information will find it in Bartholow's Materia Medica and in Fothergill's "Antagonism of Therapeutic Agents," a very recent and valuable contribution to the literature of this subject.

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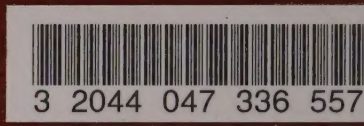
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